GTAconsultants

Traffic Assessment Review
55 Coonara Avenue, West Pennant Hills

Client // The Hills Shire Council
Office // NSW
Reference // N148250
Date // 16/10/18

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
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Table of Contents

Appendices

Figures

Tables

1. Introduction

1.1 Background

GTA has been engaged by Mu Group, who have been engaged by the Hills Shire Council, to assess the wider network impacts of proposed rezoning of land at 55 Coonara Avenue West Pennant Hills. The site is presently zoned as office/ commercial and is proposed to be zoned as a mix of high and low density residential. Mirvac proposes to develop a total of 600 dwellings (200 low density and 400 apartment style dwellings) within the site.

Anton Reich Consulting (ARC) have previously prepared a traffic impact assessment[1] (ARC Report) for the proposed development. The assessment looked at the impact of the traffic generated by the development on the nearby intersection of Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive. The Hills Shire Council identified the need to assess the wider impacts of this development traffic particularly on congested intersections such as the Oakes Road/ Aiken Road.

ARC have assessed comprehensive scenarios looking at trip generation for the site. It is noted that should the full commercial potential of the site be realised, it would generate significantly higher amount of traffic as compared to what is currently being proposed. As such, the zoned potential of the site was never realised with the highest occupancy being 3500 staff in 1980. This number has significantly dropped since then and 2015 estimates show that about 1200 staff are currently employed there.

With the decreasing employment figures, it can be deduced that the site was never really an attractive site for commercial operations and therefore never realised its full commercial potential. In assessing the potential impacts of the proposed residential development, trip rates and distribution calculated in Section 3 of the ARC Report have been utilised, noting that these are based on The Hills Shire Council (Council) trip rates.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated traffic impacts of the proposed rezoning development, including consideration of the following:

i existing traffic conditions surrounding the site
ii the traffic generating characteristics of the proposed development
iii the transport impact of the rezoning proposal on the surrounding road network.

[1] 55 Coonara Avenue West Pennant Hills Planning Proposal Revision 4 Traffic Assessment July 2017

1.3 References

In preparing this report, reference has been made to the following:

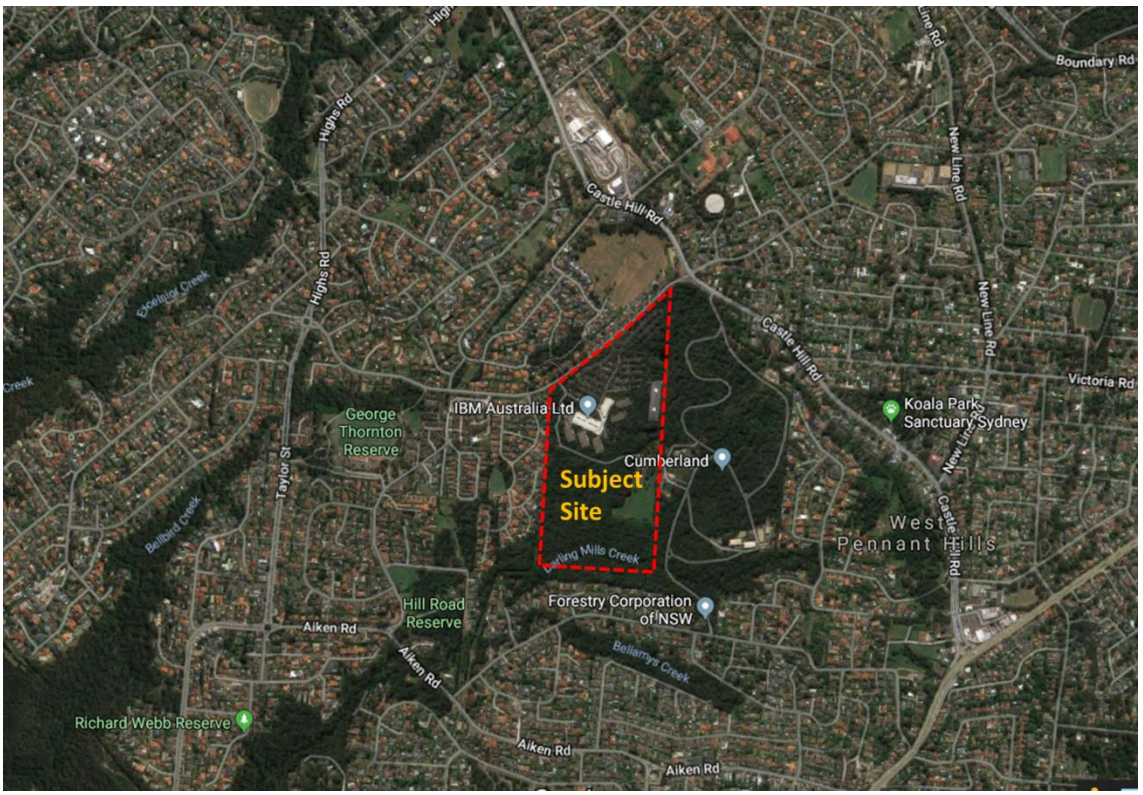
- an inspection of the site and its surrounds
- The Hills Shire Council Development Control Plan (DCP) 2012
- The Hills Shire Council Local Environmental Plan (LEP) 2012
- Anton Reich Consulting Traffic and Transport Traffic Assessment, July 2017
- West Pennant Hills Bus Priority Measure, Cardno, June 2010
- NorthConnex EIS (July 2014)
- other documents and data as referenced in this report.

2. Existing Conditions

The subject site is located at 55 Coonara Avenue, West Pennant Hills. The site currently has a land use classification as B7 Business Park and is occupied by NorthConnex.

The surrounding properties are predominately low density residential. There is a local shopping centre located 300 metres west of the site. The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject site and its environs



2.1 Existing Network

Coonara Avenue

Coonara Avenue is a collector road and on the northern boundary of the site running in the east-west direction. It is a two-way road with one lane in each direction and a posted speed limit of 50 km/hr. It is a 13-metre-wide carriageway, set within a 20-metre-wide road reserve (approximately). Parking lane is marked along the length of Coonara Avenue subject to time restrictions on some sections.

Figure 2.2: Coonara Avenue- looking southbound outside the site access point

Source: Google Maps

Castle Hill Road

Castle Hill Road is a State Road and is generally two lanes in each direction with storage lanes provided for turning traffic. It has a posted speed limit of 60 km/hr.

Figure 2.3: Castle Hill Road – looking westbound

Source: Google Maps

2.2 Existing Traffic

2.2.1 Traffic Surveys

The following surveys were conducted by Council in order to understand the existing conditions within the study area:

- Classified Intersection Counts – Tuesday 5th June 2018 Queue Length Surveys – Tuesday 5th June 2018
- Origin-Destination Surveys – Wednesday 7th February 2018

The following sections provide further details on each type of data collected.

Classified Intersection Counts

Classified intersection turn counts were collected at the following four intersections:

- Aiken Road & Oakes Road
- Coonara Avenue & Highs Road & Taylor Street
- Coonara Avenue & Castle Hill Road & Edward Bennett Drive
- Highs Road & Castle Hill Road & Country Drive

The data was collected for the morning hours from 7 am to 9 am and afternoon hours of 4 pm to 6 pm. The total traffic volumes (summed up across all sites) are shown in Figure 2.4 and Figure 2.5 for AM and PM peak hours respectively. The intersection counts indicate the AM peak period for the study intersections is 8:00am to 9:00am and the PM peak is 4:30pm to 5:30pm.

Figure 2.4: AM Peak Hour Volume

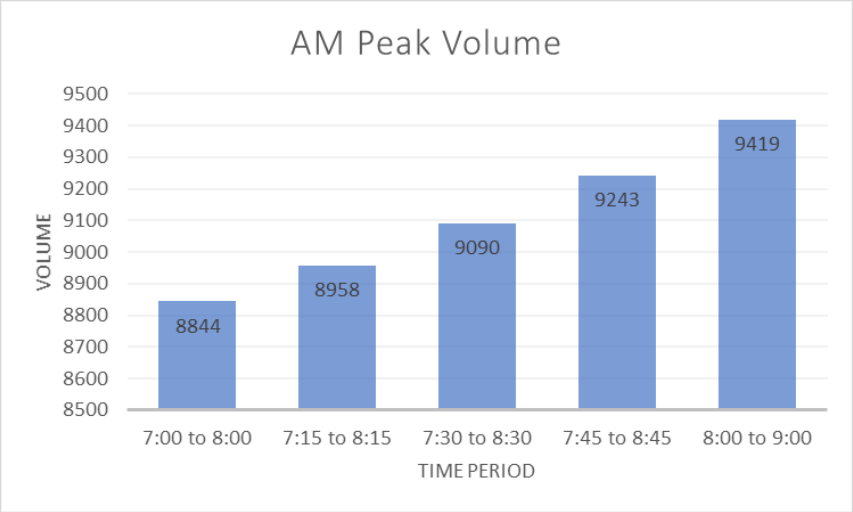
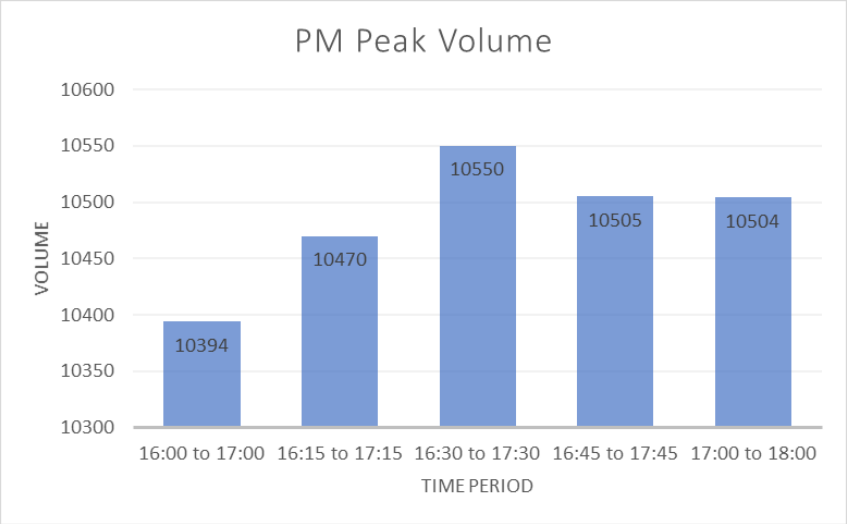


Figure 2.5: PM Peak Hour Volume



The observed peak hour turn traffic for all four intersections is shown in Figure 2.6 and Figure 2.7 for AM and PM peak hours respectively.

Figure 2.6: Existing AM Peak Hour Traffic Volumes

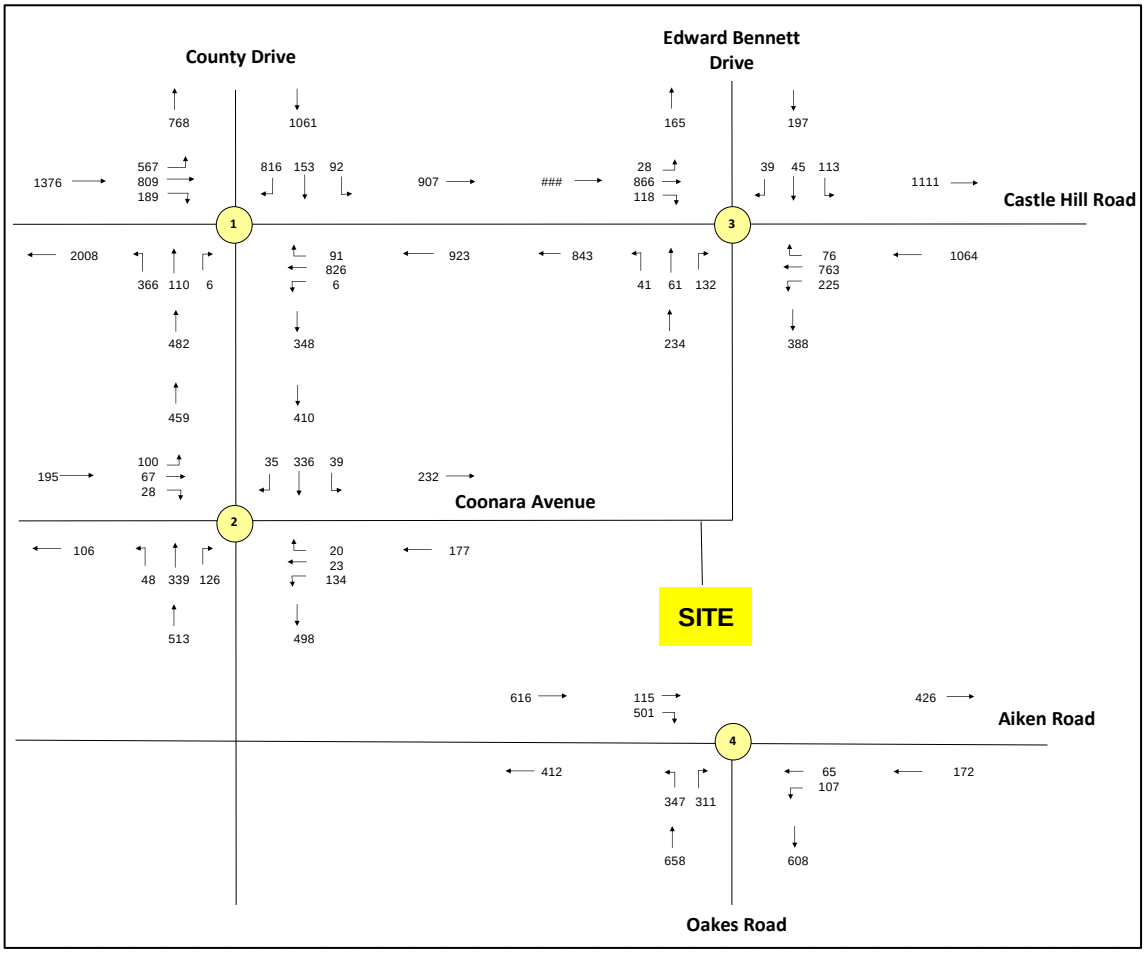
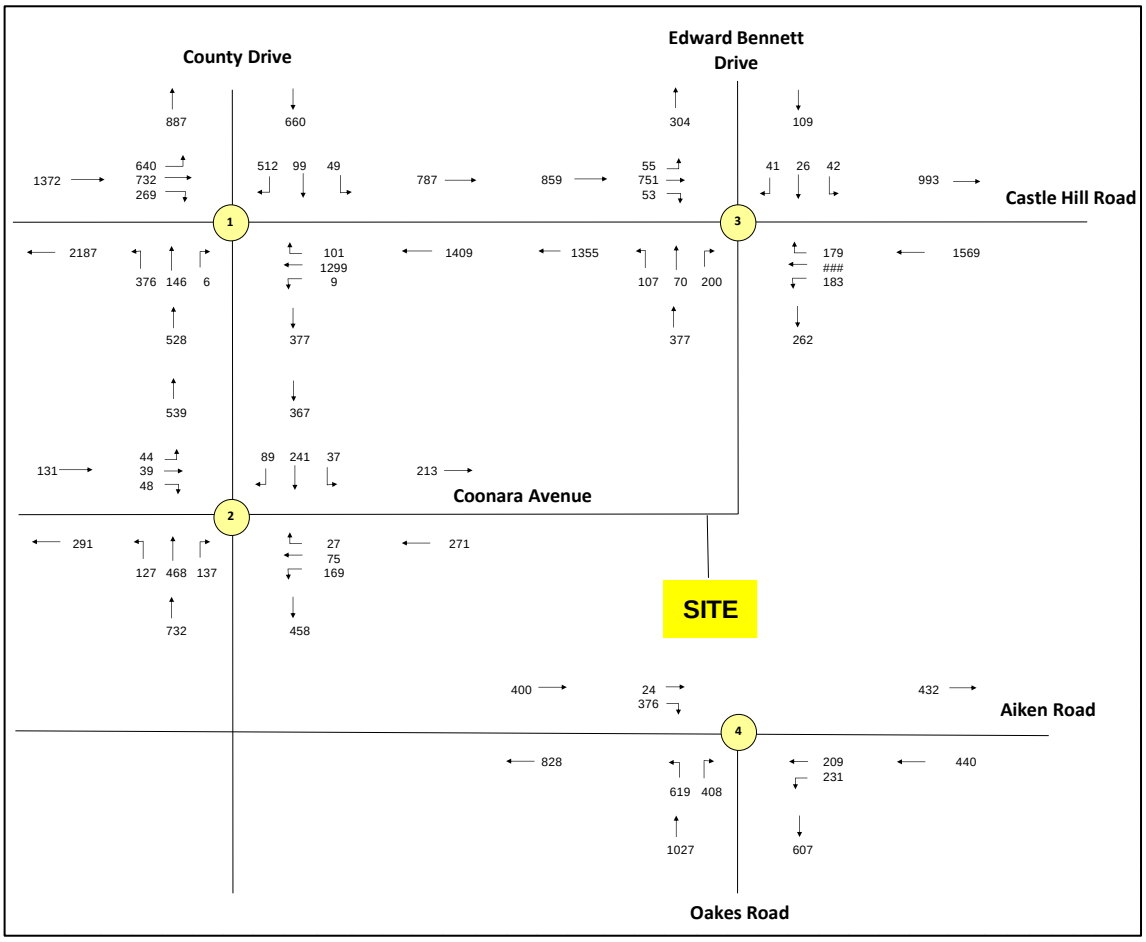
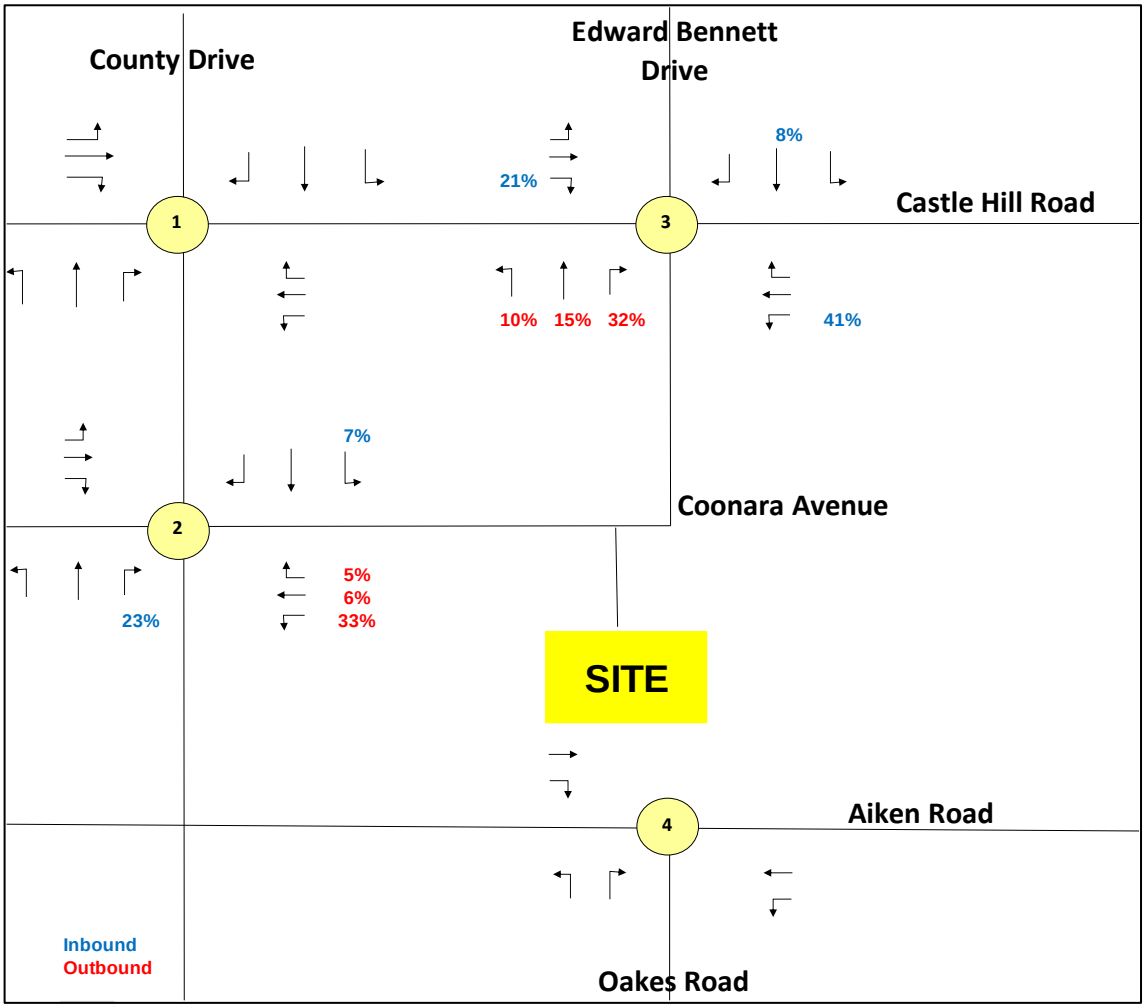


Figure 2.7: Existing PM Peak Hour Traffic Volumes



It is noted that traffic surveys did not include the site access. It is expected that the majority of traffic on Coonara Avenue would either have an origin or a destination at the site as the area is predominantly residential with a small shopping complex including a Woolworths located about 300 meters south of the site. Therefore the existing percentage split (Figure 2.9) inbound and outbound traffic is based on the existing survey data shown in Figure 2.6 and Figure 2.7.

Figure 2.8: Existing Percentage Traffic Distribution



Queue Length Surveys

Consistent with the Intersection count surveys, queue length data was collected for the morning hours from 7:00am to 9:00am and afternoon hours of 4:00pm to 6:00pm. Observed queue lengths in each traffic lane for the assessed intersections is provided from Figure 2.9 to Figure 2.12

Figure 2.9: Observed Queue Length at Oakes Road / Aiken Road roundabout

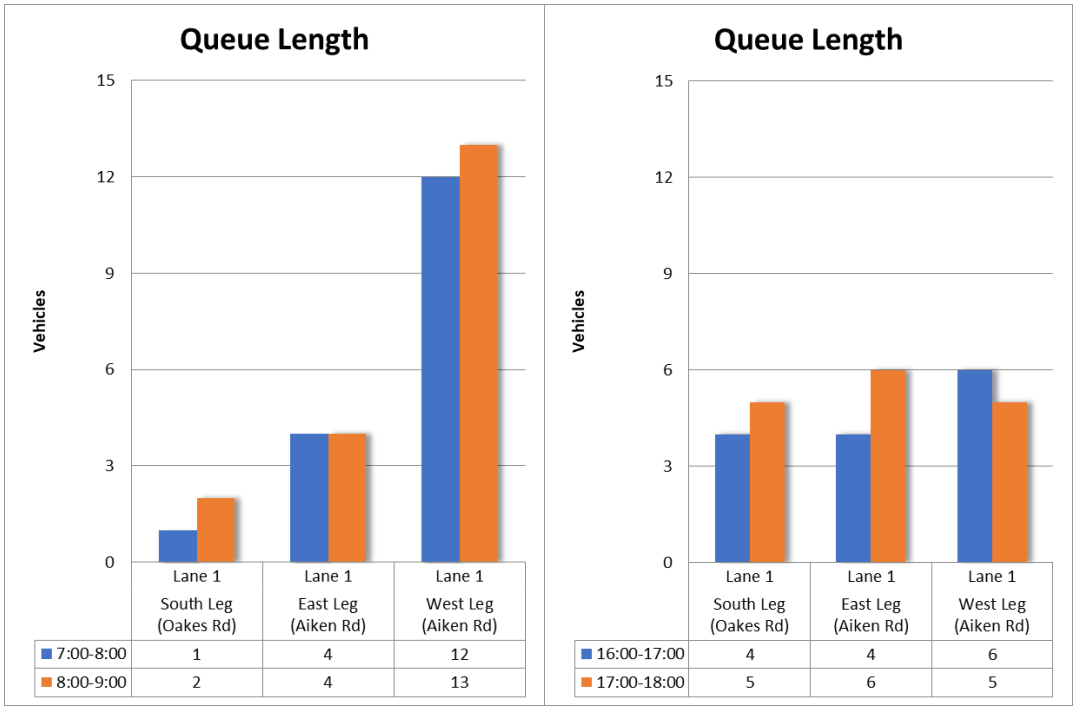


Figure 2.10: Observed Queue Length at Coonara Avenue / Highs Road / Taylor Street intersection

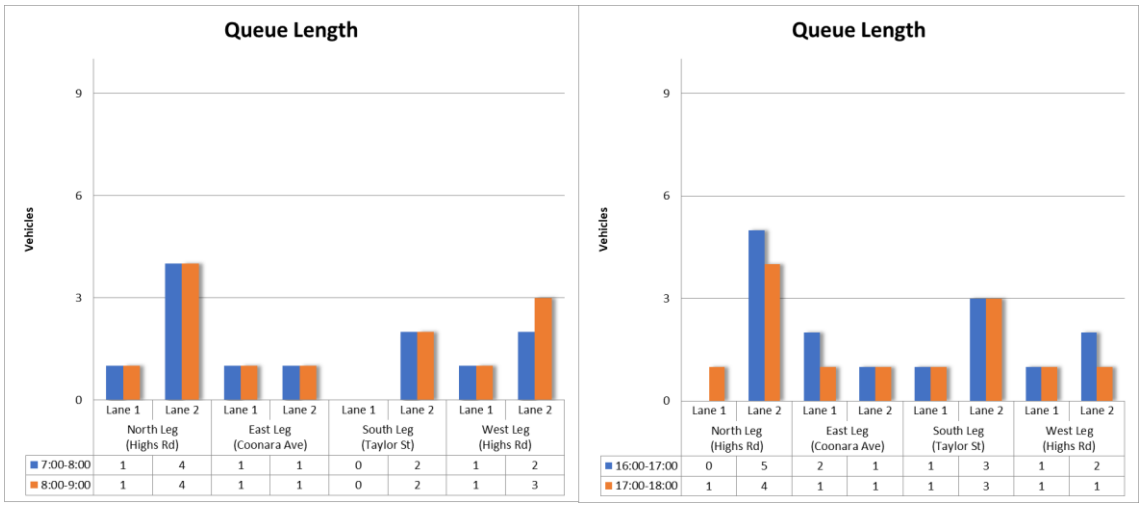
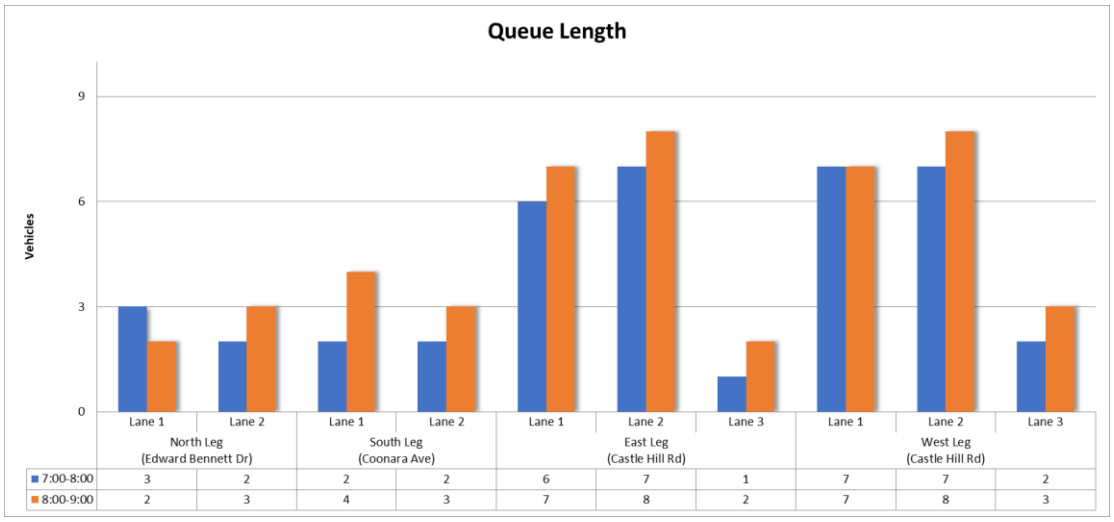
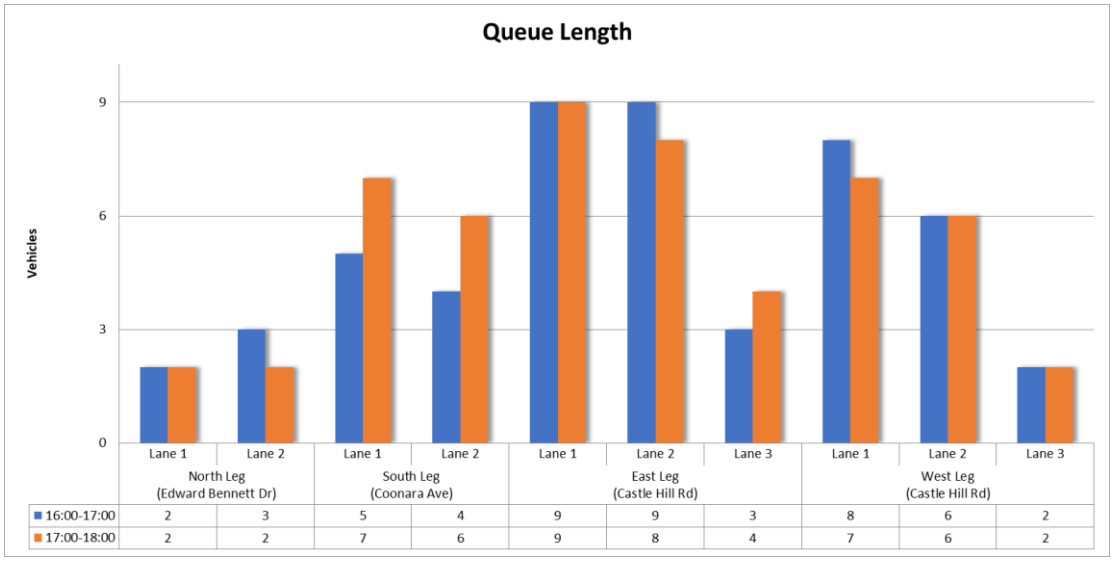


Figure 2.11: Observed Queue Length at Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive intersection

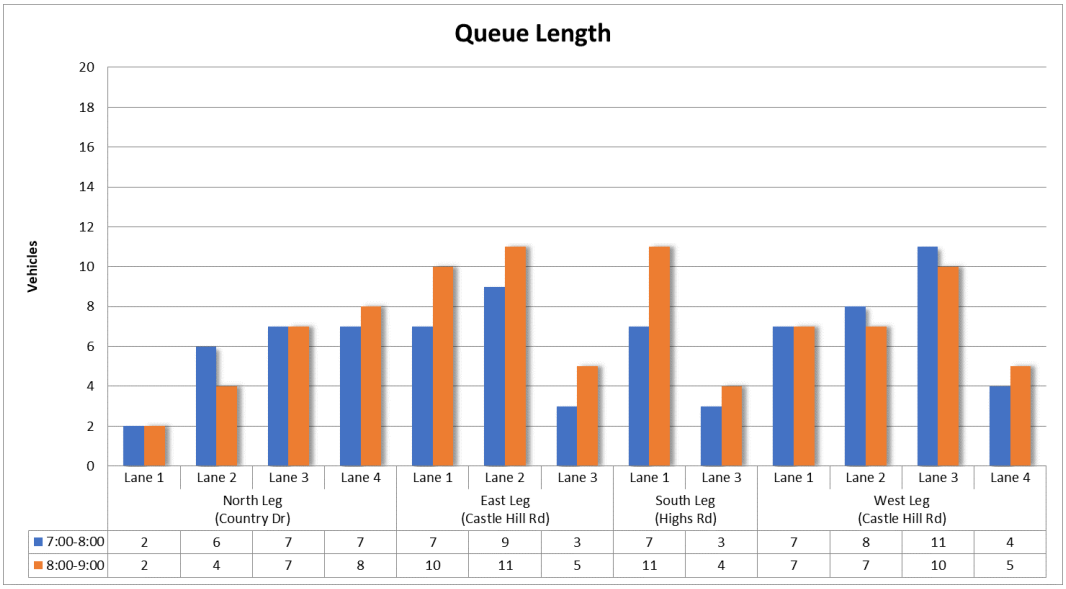


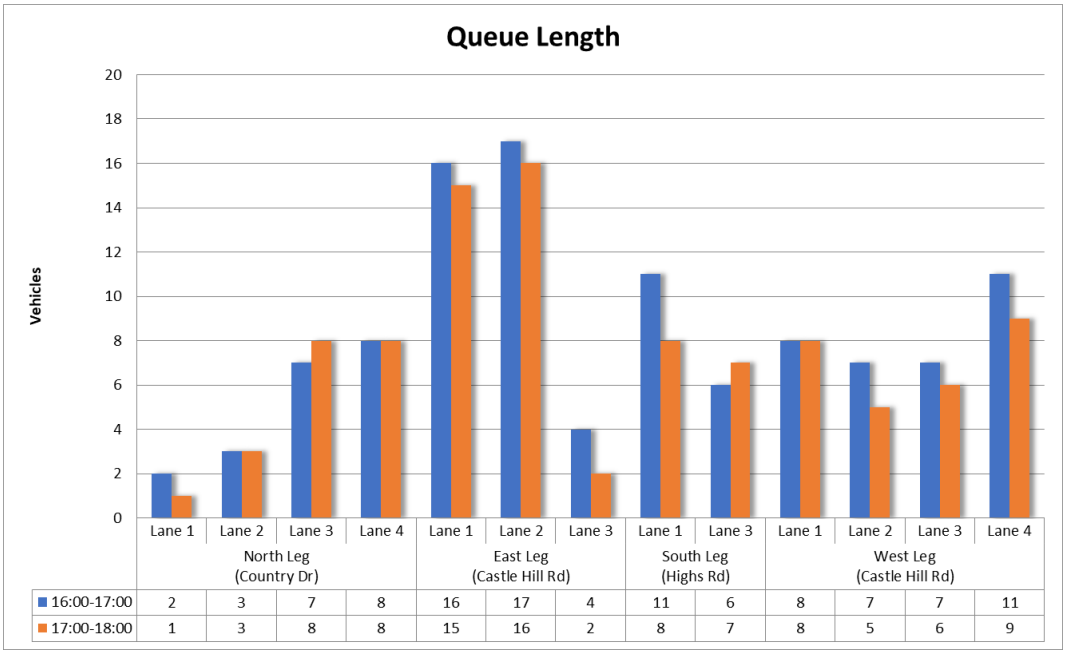
	North Leg (Edward Bennett Dr)		South Leg (Coonara Ave)		East Leg (Castle Hill Rd)			West Leg (Castle Hill Rd)		
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3
7:00-8:00	3	2	2	2	6	7	1	7	7	2
8:00-9:00	2	3	4	3	7	8	2	7	8	3



	North Leg (Edward Bennett Dr)		South Leg (Coonara Ave)		East Leg (Castle Hill Rd)			West Leg (Castle Hill Rd)		
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3
16:00-17:00	2	3	5	4	9	9	3	8	6	2
17:00-18:00	2	2	7	6	9	8	4	7	6	2

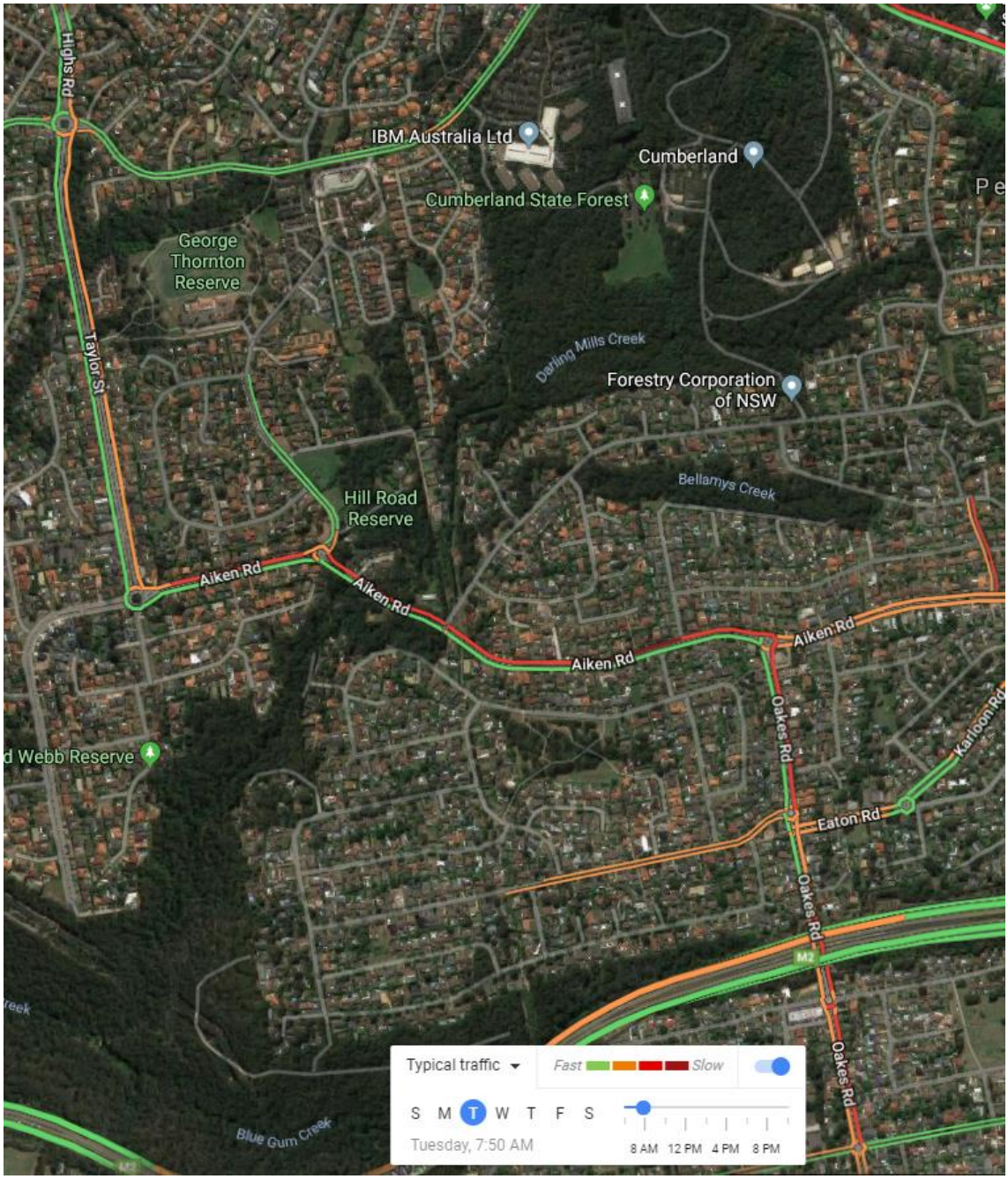
Figure 2.12: Observed Queue Length at Highs Road/ Castle Hill Road/ County Drive intersection





It is noted that the collection of queue length data is very subjective as it depends on the person collecting data to quantify the queue length. Desktop review and local knowledge indicated that long moving queues are observed at Aiken Road in the eastbound direction that extend from Oakes Road all the way back to Taylor Street during the AM peak period. A screenshot from Google Traffic is provided in Figure 2.13.

Figure 2.13: Observed Queue Length at Aiken Road during AM peak period



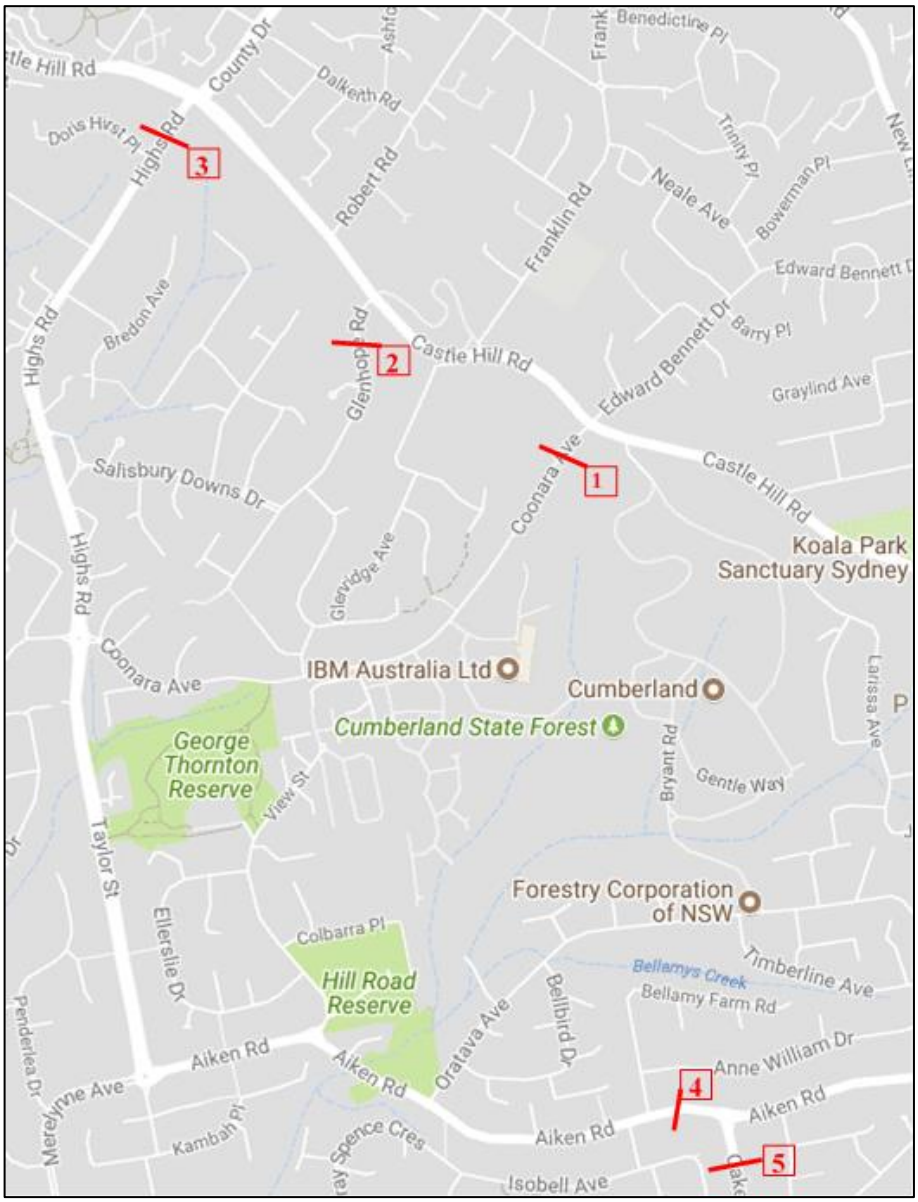
Origin Destination Surveys

To determine travel patterns in the study area, an O-D survey was commissioned by Council on 7th February 2018 at five survey locations for the AM peak period only in the southbound/ eastbound direction. Locations of the five O-D survey stations are described in Table 2.1 and shown graphically in Figure 2.14.

Table 2.1: Origin-Destination Survey Locations

Number	Direction	Road	Location
1S	Southbound	Coonara Avenue	south of Castle Hill Road
2S	Southbound	Glenhope Road	south of Castle Hill Road
3S	Southbound	Highs Road	south of Castle Hill Road
4E	Eastbound	Aitken Road	west of Oakes Road
5S	Southbound	Oakes Road	south of Aitken Road

Figure 2.14: Origin- Destination Survey Locations



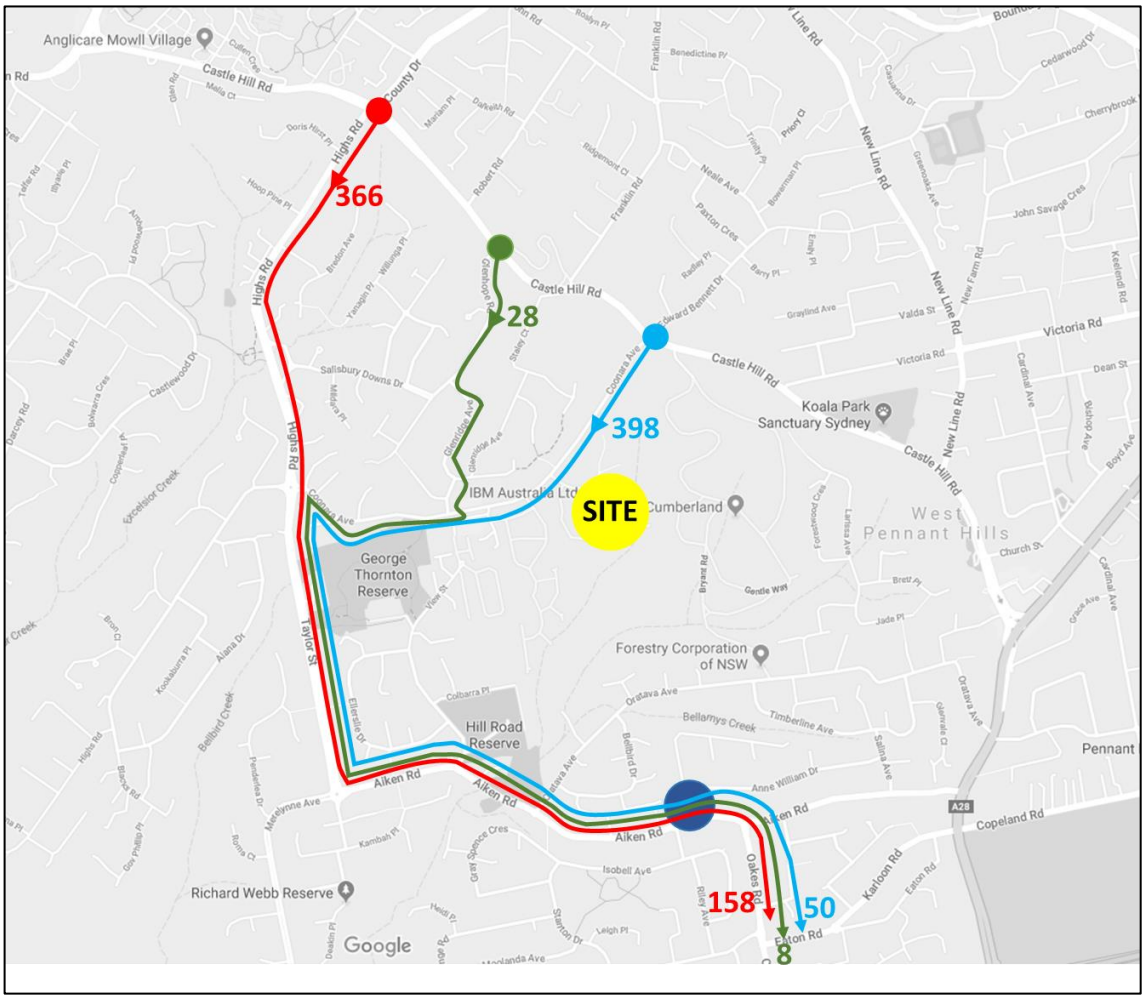
The O-D surveys provide an understanding of how many vehicles utilise Oakes Road to travel towards Paramatta and Carlingford and their respective origins.

Following was observed from the O-D data analysis:

- About 608 vehicles per hour are observed to travel southbound at Oakes Road (Station 5S)
- 36% (216 vehicles) of this southbound traffic is observed to arrive from the three stations in total, namely Coonara Avenue, Glenhope Road and Highs Road.
    - About 158 (26%) vehicles arrive from the Highs Road Station (3S)
    - About 50 (8%) vehicles arrive from the Coonara Avenue Station (1S)
    - About 8 (1%) vehicles arrive from the Glenhope Road intersection (2S)
- Similar amount of traffic is observed travelling southbound at Coonara Avenue (388 veh per hour) and at Highs Road (356 veh per hour)
    - A higher proportion of traffic at Highs Road travels towards Oakes Road (SB) from Highs Road (44%) as compared to Coonara Avenue (13%).

The O-D analysis is shown graphically in Figure 2.15.

Figure 2.15: Origin-Destination Analysis



2.3 Existing Network Performance

The operation of the key intersections within the study area have been assessed using SIDRA INTERSECTION[2], a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the Road and Maritime, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2.2 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service. For the purposes of this assessment LOS D is considered acceptable.

Degree of saturation (DOS) is defined as the ration of demand (in vehicles per hour) over the capacity. DOS is a good measure of spare capacity available at the intersection. A DOS >0.9 implies that the intersection is performing close to capacity.

For a signalised intersection an overall average delay is reported whereas for a roundabout the worst movement is reported.

Table 2.2: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 2.3 presents a summary of the existing operation of the intersection, with detailed results presented in Appendix B of this report.

Table 2.3: Existing Performance Results

Intersection	Control	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Highs Road/ Castle Hill Road/ County Drive	Signals	AM	0.92	39	164	C
		PM	0.95	46	308	D
Coonara Avenue/ Highs Road/ Taylor Street	Roundabout	AM	0.10	10	4	A
		PM	0.07	9	2	A
Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive	Signals	AM	0.91	34	169	C
		PM	0.89	33	290	C
Aiken Road/ Oakes Road	Roundabout	AM	0.96	44	170	D
		PM	0.47	10	25	A

[2] Program used under license from Akcelik & Associates Pty Ltd.

The following can be observed from the intersection performance results:

- All intersections assessed are performing at acceptable levels (LOS D) or better except for the Aiken Road/ Oakes Road roundabout during the AM peak hour.
- The right turn from Aiken Road to Oakes Road is operating at acceptable LOS D, however has a high degree of saturation (>0.9). This is due to the southbound queues at Oakes Road spilling back from upstream intersections as observed in Figure 2.9. Any further increase in traffic will significantly impact the performance of this roundabout.

It is noted that, should the upstream queues not impact the performance of the Aiken Road/ Oakes Road roundabout, the roundabout is expected to operate at acceptable levels

3. Traffic Impact Assessment

3.1 Traffic Generation

For the purposes of this assessment the trips generated by the proposed development have been added to the observed traffic volumes at the adjacent intersections. This approach does not exclude traffic generated by the existing land uses at the site (included in the traffic surveys) and is therefore considered on the conservative side

3.1.1 Trip Rates

Traffic generation estimates for the proposed development have been sourced from Section 3 of the ARC Report. Estimated peak hour traffic volumes resulting from the proposal are set out in Table 3.1.

Table 3.1: Traffic Generation Estimates

Period	Traffic Generation Rate (trips)
AM Peak	339
PM Peak	347

Table 3.1 indicates that the site could potentially generate 339 vehicle movements in the AM peak hour and up to 347 vehicle movements in the PM peak hour.

The following trip inbound/ outbound distribution has been applied (as per the ARC Report):

- AM Peak hour
  - Arrival – 20%
  - Departure – 80%
- PM Peak Hour
  - Arrival – 80%
  - Departure – 20%

3.1.2 Trip Distribution

With the development of the NorthConnex and the Sydney Metro station it is anticipated that congestion levels at Castle Hill Road and at Pennant Hills Road are likely to reduce. Traffic distribution may also change after opening of the NorthConnex and Sydney Metro in 2019. Therefore, for a robust analysis three different trip distribution analysis have been tested.

- Scenario 1 – 80% traffic to/ from Castle Hill Road
- Scenario 2 – 20% traffic to/ from Castle Hill Road
- Scenario 3 – 50% traffic to/ from Castle Hill Road

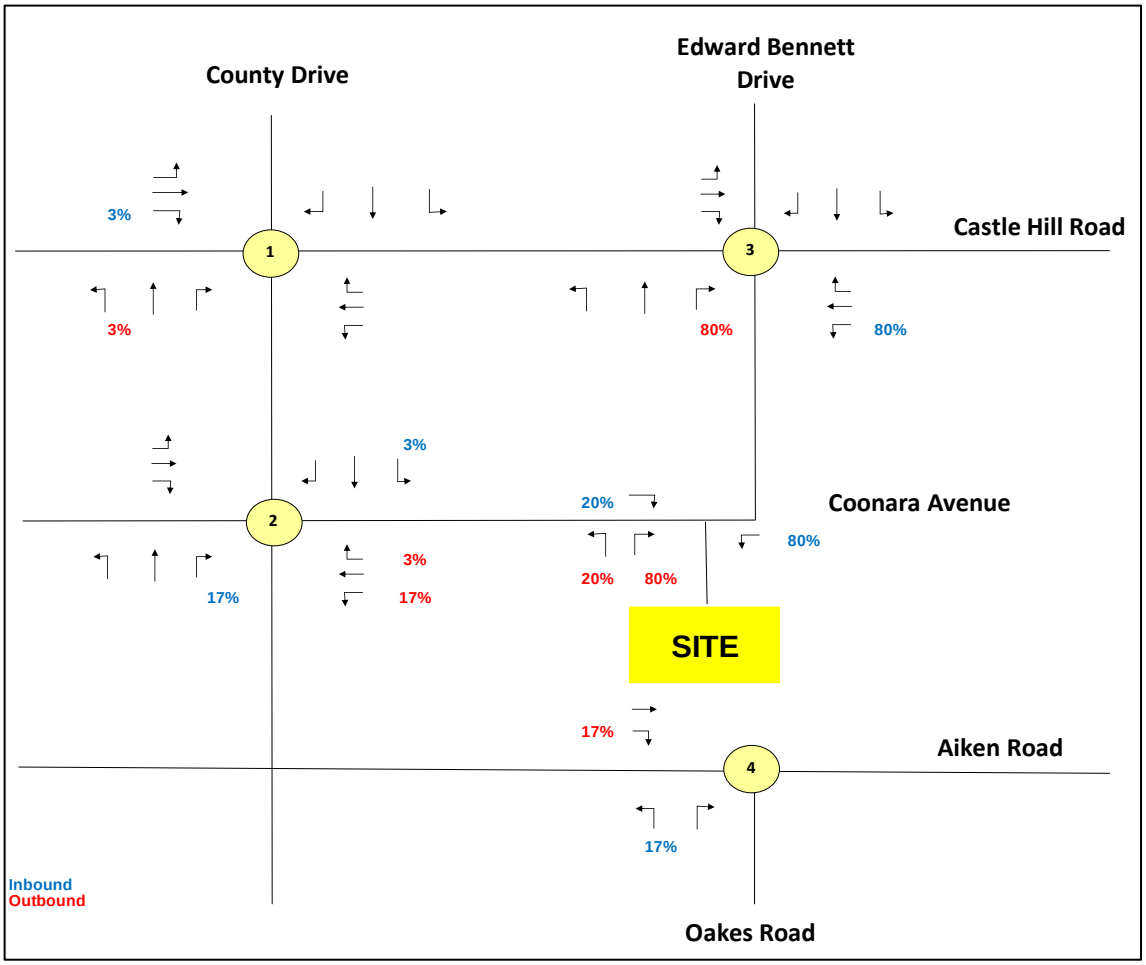
Scenario 1

For the purposes of estimating vehicle movements, the following directional distributions have been assumed:

- Taylor Street 17 per cent
- Highs Road 3 per cent
- Castle Hill Road (via Coonara Avenue) 80 per cent.

Figure 3.1 graphically shows the percentage of traffic distribution across the four intersections.

Figure 3.1: Percentage Traffic Distribution under Scenario 1



Additional traffic generated due to the development under Scenario 1 is shown in Figure 3.2 for the AM peak hour and Figure 3.3 for the PM peak hour.

Figure 3.2: Scenario 1 Development Traffic -AM Peak Hour

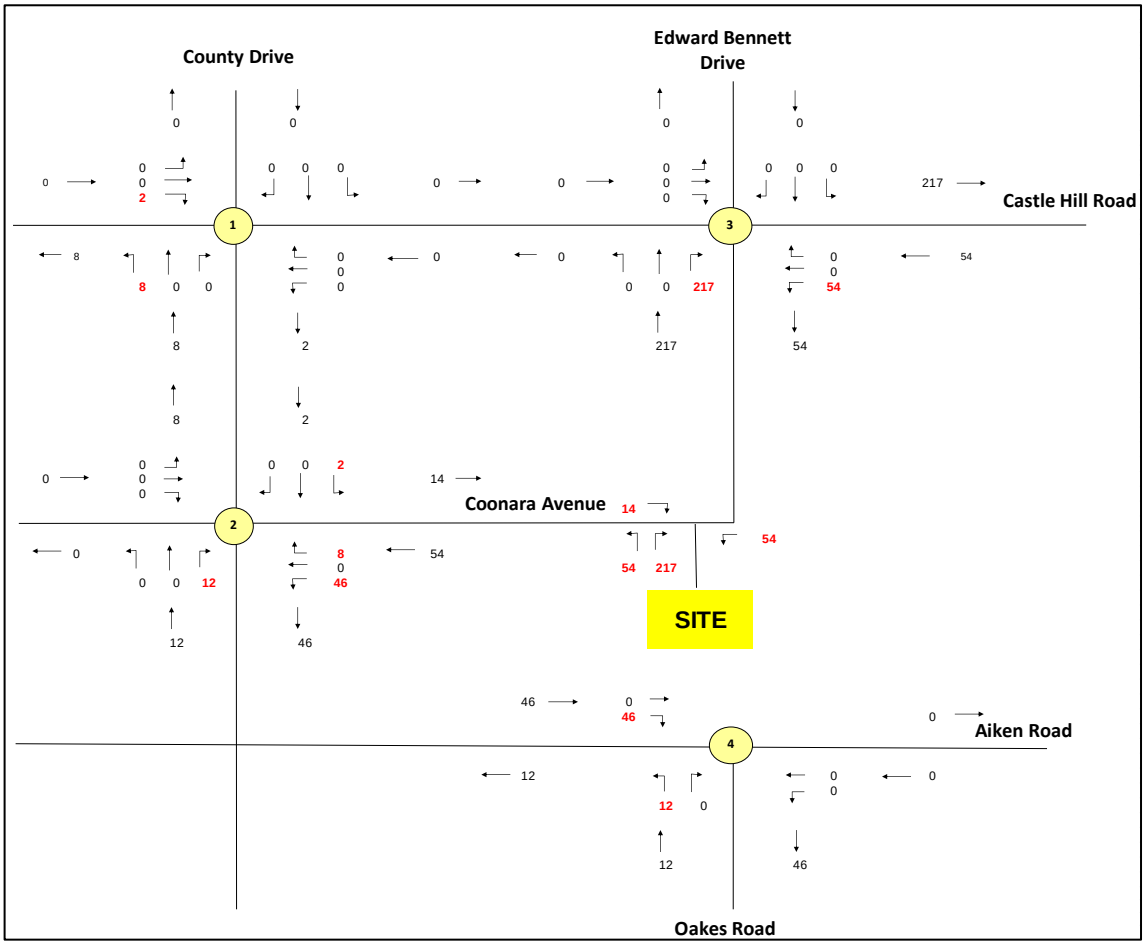
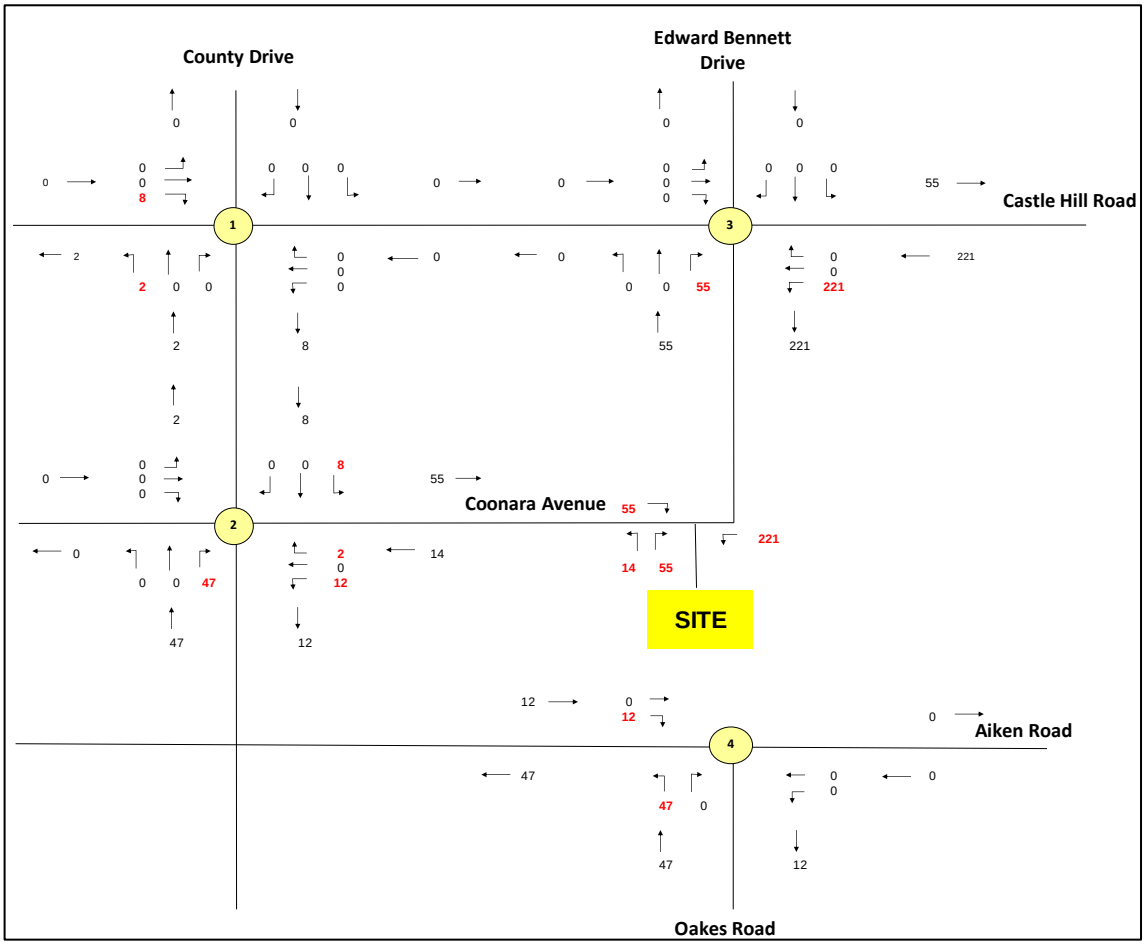


Figure 3.3: Scenario 1 Development Traffic - PM Peak Hour



Total traffic with the proposed development under Scenario 1 is shown in Figure 3.4 and Figure 3.5 for AM and PM peak hours respectively.

Figure 3.4: Scenario 1 total traffic with proposed development – AM Peak Hour

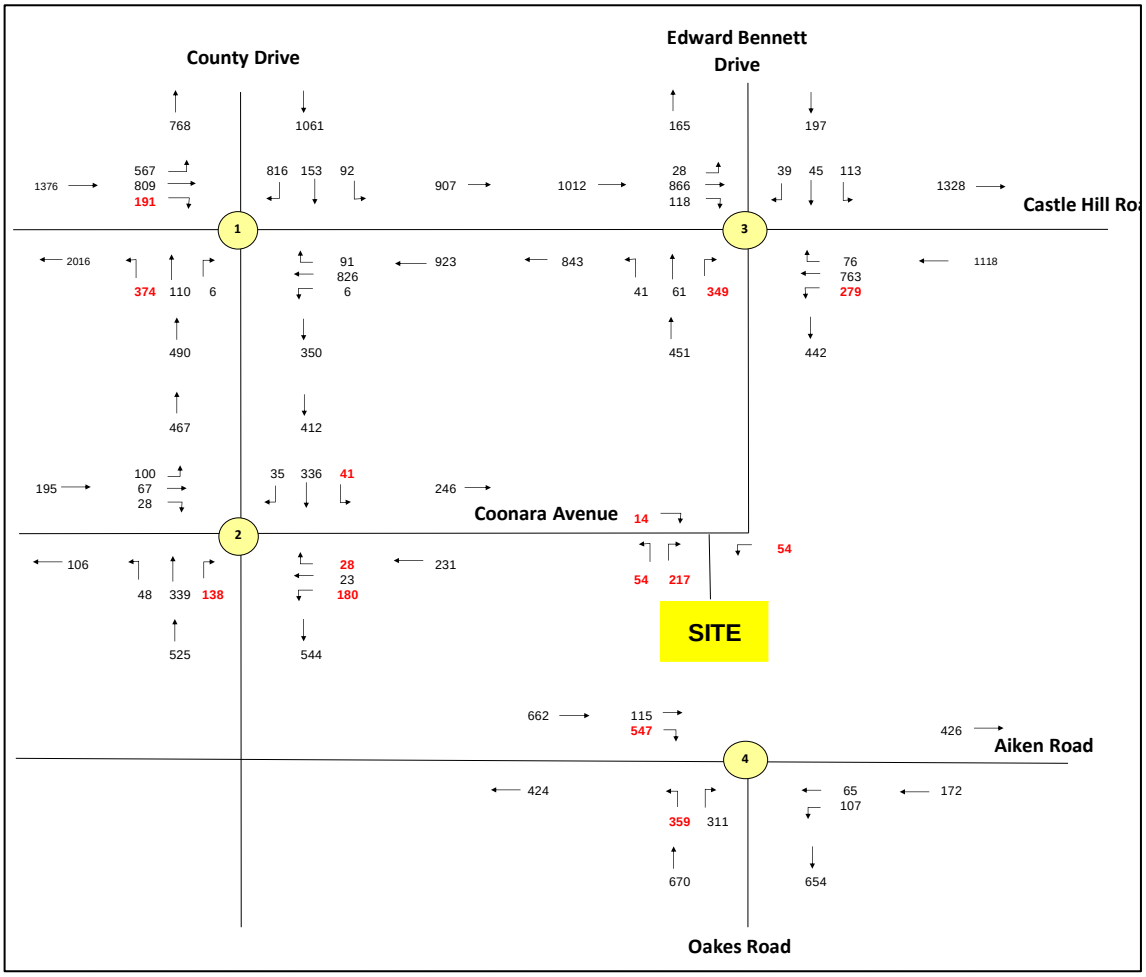
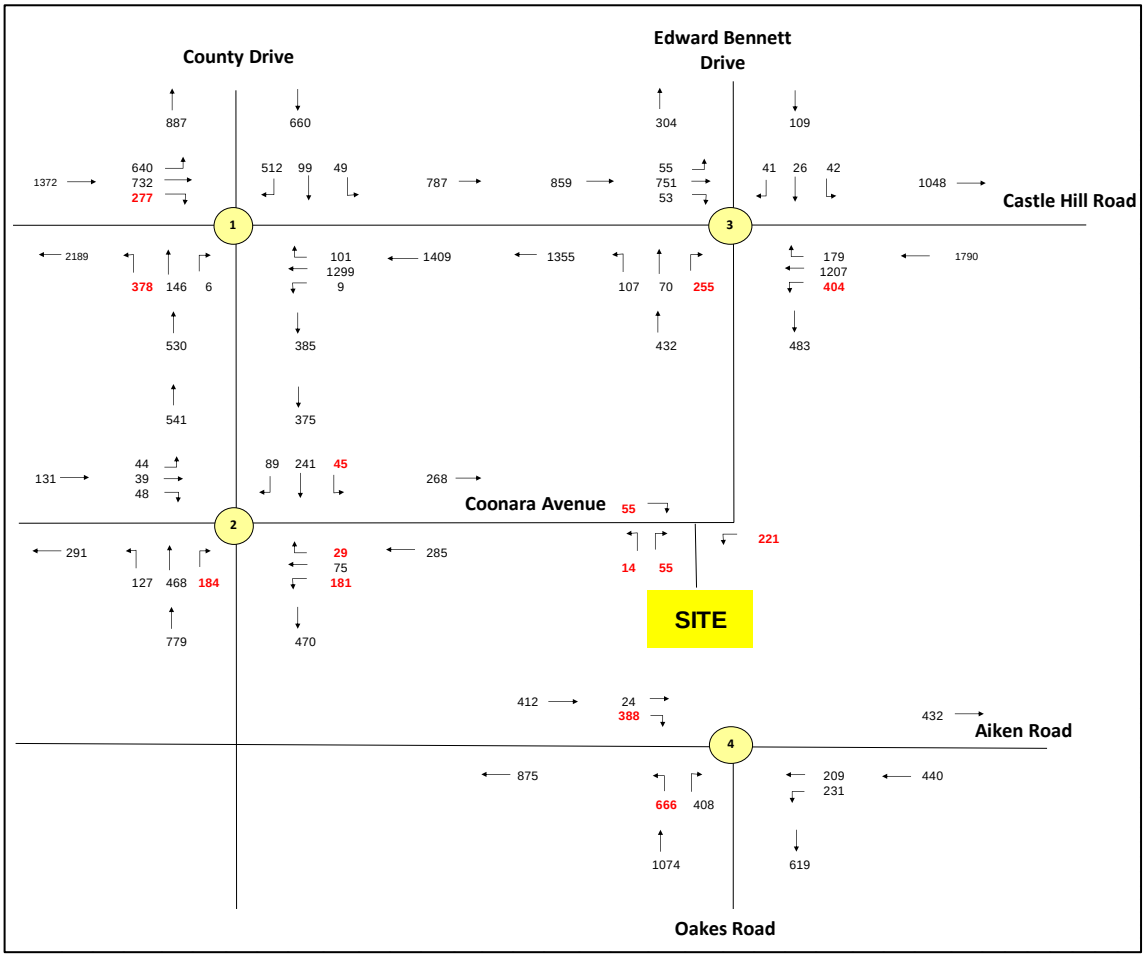


Figure 3.5: Scenario 1 total traffic with proposed development – PM Peak Hour



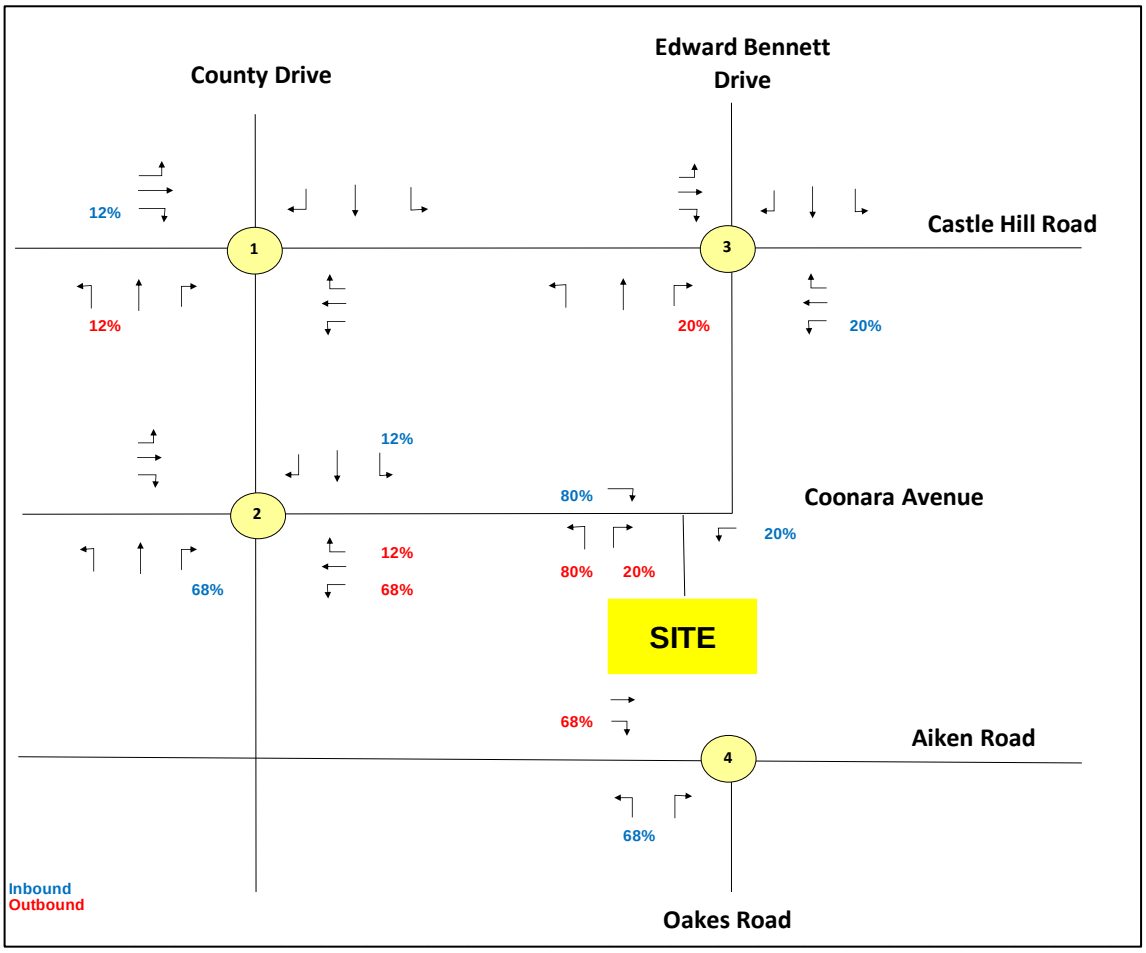
Scenario 2

For the purposes of estimating vehicle movements, the following directional distributions have been assumed under Scenario 2:

- Taylor Street 68 per cent
- Highs Road 12 per cent
- Castle Hill Road (via Coonara Avenue) 20 per cent.

Figure 3.6 graphically shows the percentage of traffic distribution under Scenario 2 across the four intersections.

Figure 3.6: Percentage Traffic Distribution under Scenario 2



Additional traffic generated due to the development under scenario 2 is shown in Figure 3.7 for the AM peak hour and Figure 3.8 for the PM peak hour.

Figure 3.7: Scenario 2 Development Traffic -AM Peak Hour

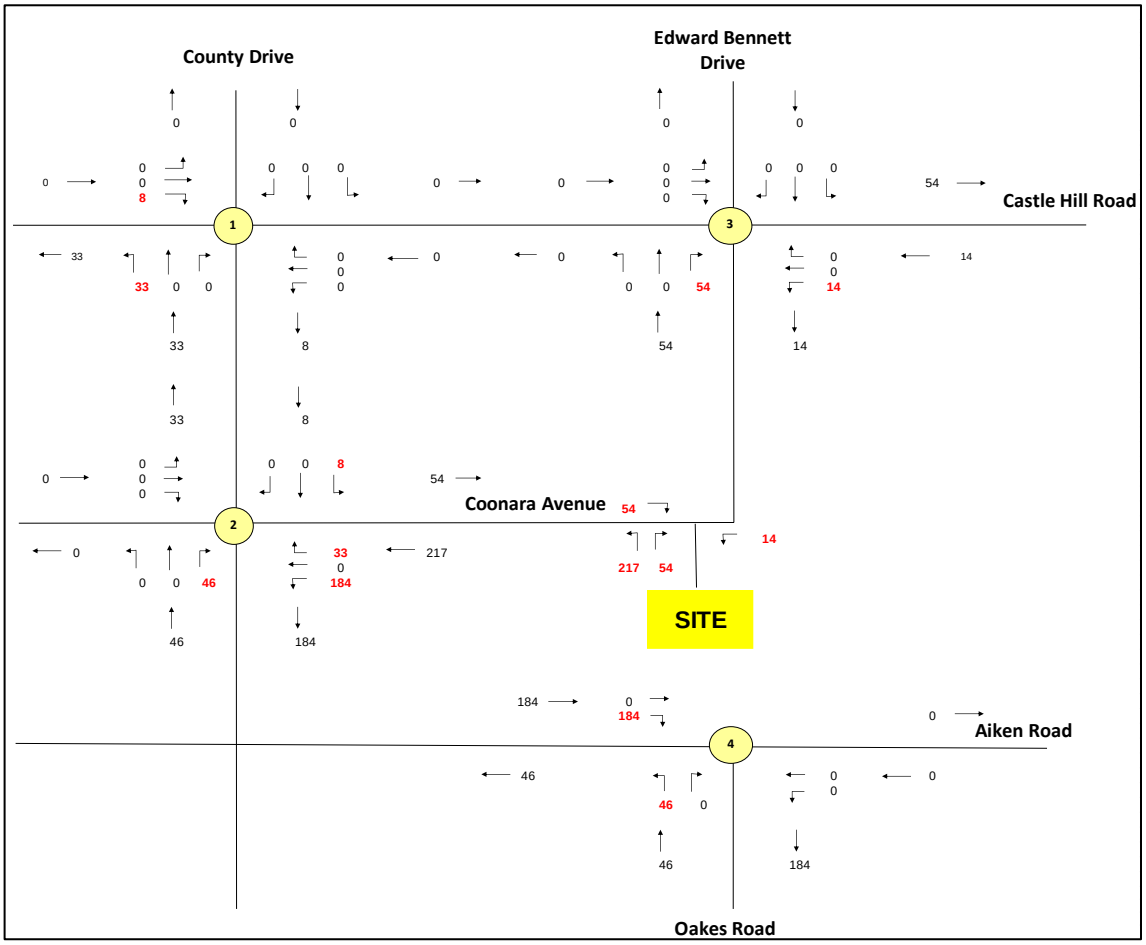
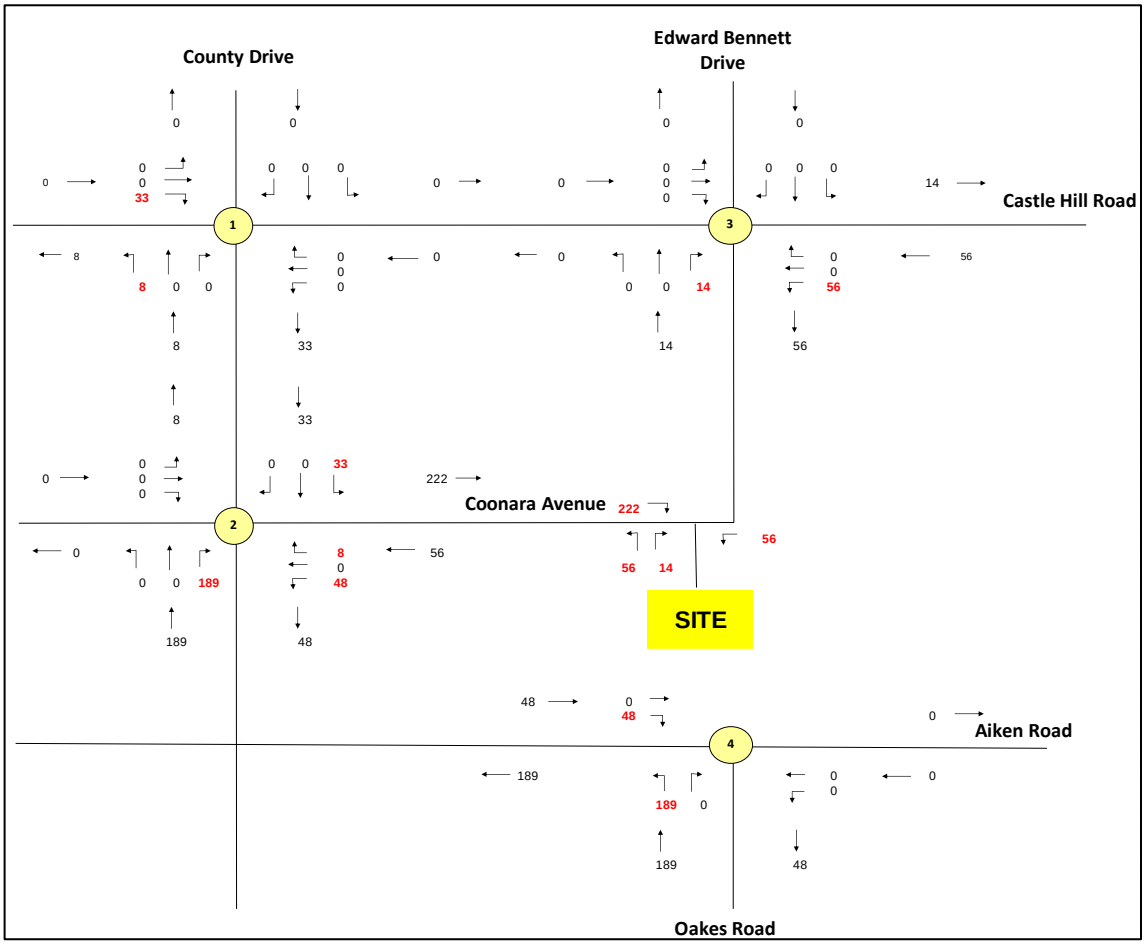


Figure 3.8: Scenario 2 Development Traffic - PM Peak Hour



Total traffic with the proposed development under Scenario 2 is shown in Figure 3.9 and Figure 3.10 for AM and PM peak hours respectively.

Figure 3.9: Scenario 2 Total Traffic - AM Peak Hour

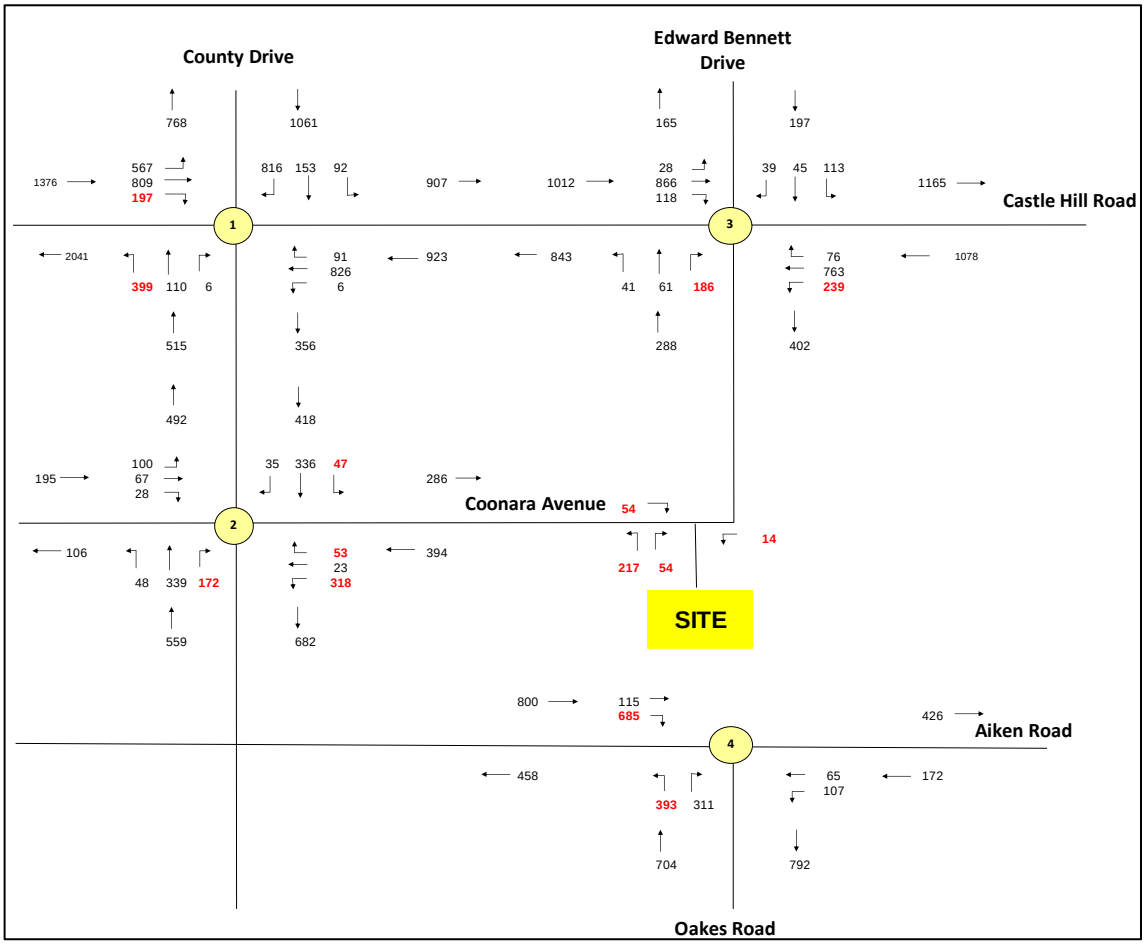
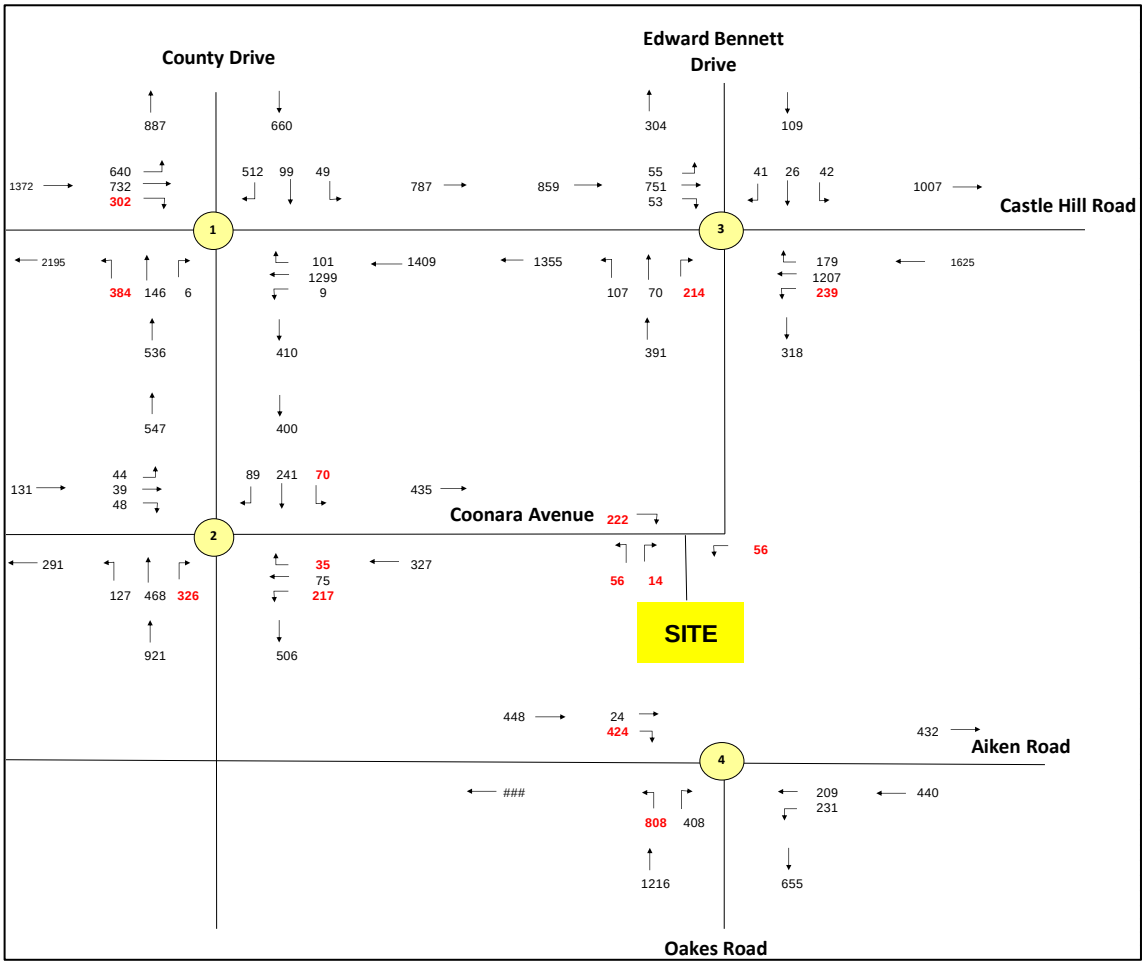


Figure 3.10: Scenario 2 Total Traffic - PM Peak Hour



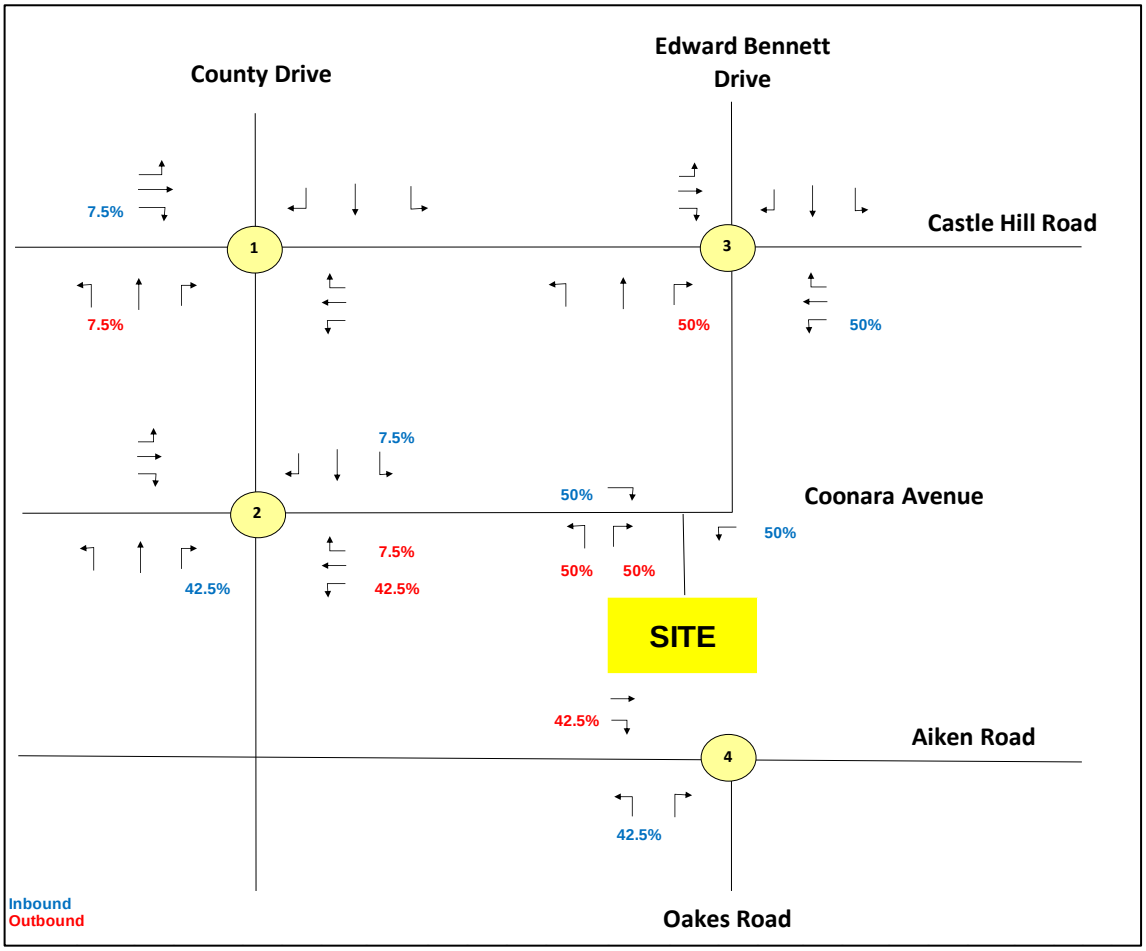
Scenario 3

For the purposes of estimating vehicle movements, the following directional distributions have been assumed:

- Taylor Street 42.5 per cent
- Highs Road 7.5 per cent
- Castle Hill Road (via Coonara Avenue) 50 per cent.

Figure 3.11 graphically shows the percentage of traffic distribution under Scenario 3 across the four intersections.

Figure 3.11: Percentage Traffic Distribution under Scenario 3



Additional traffic generated due to the development under Scenario 3 is shown in Figure 3.12 for the AM peak hour and Figure 3.13 for the PM Peak hour.

Figure 3.12: Scenario 3 Development Traffic – AM Peak Hour

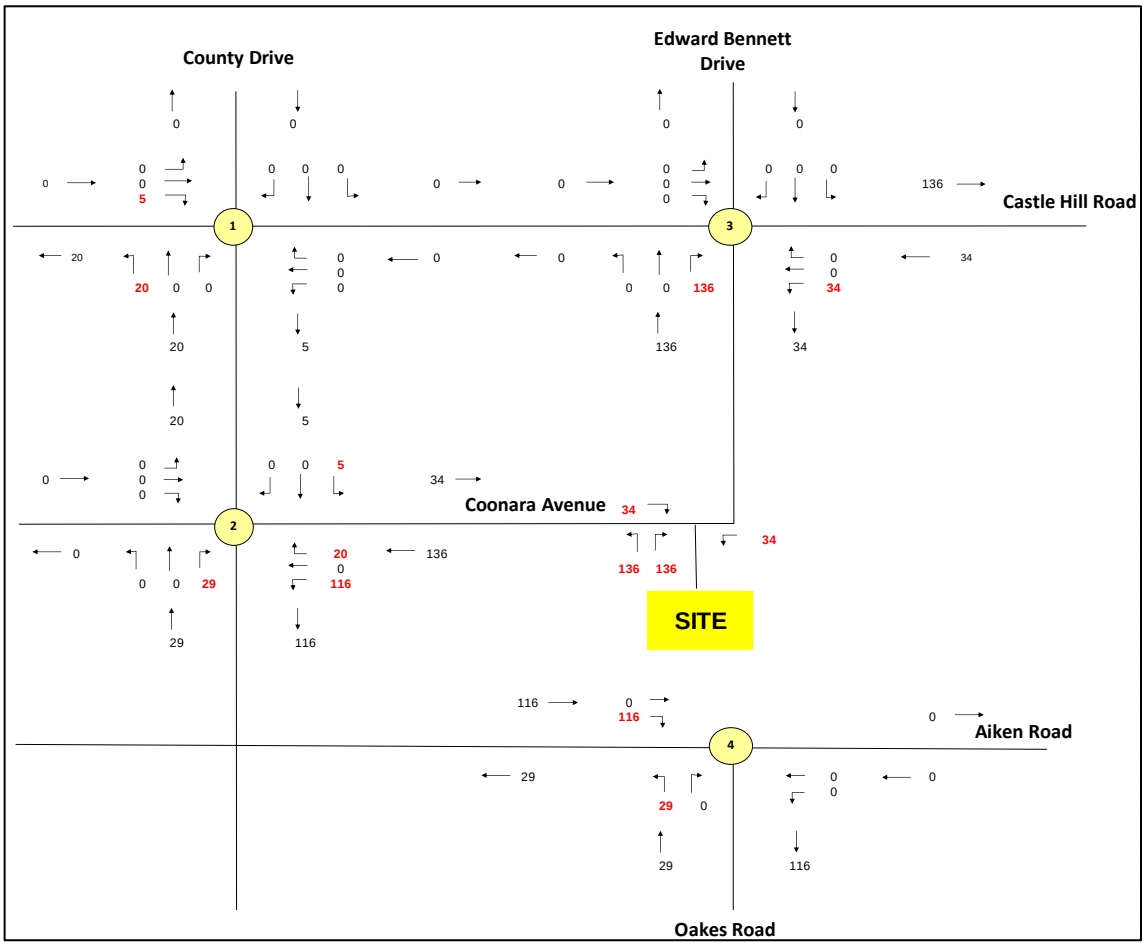
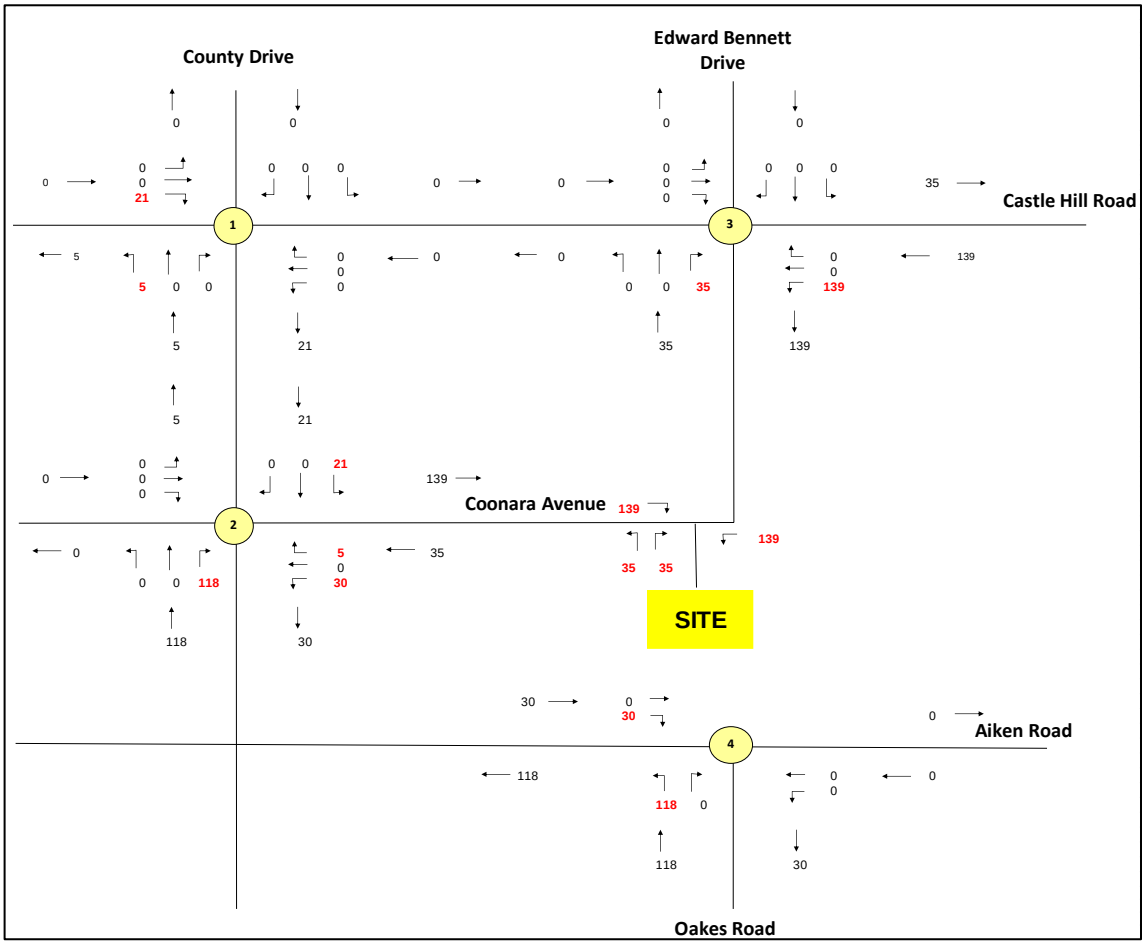


Figure 3.13: Scenario 3 Development Traffic – PM Peak Hour



Total traffic with the proposed development under Scenario 2 is shown in Figure 3.14 and Figure 3.15 for AM and PM peak hours respectively.

Figure 3.14: Scenario 3 Total Traffic – AM Peak Hour

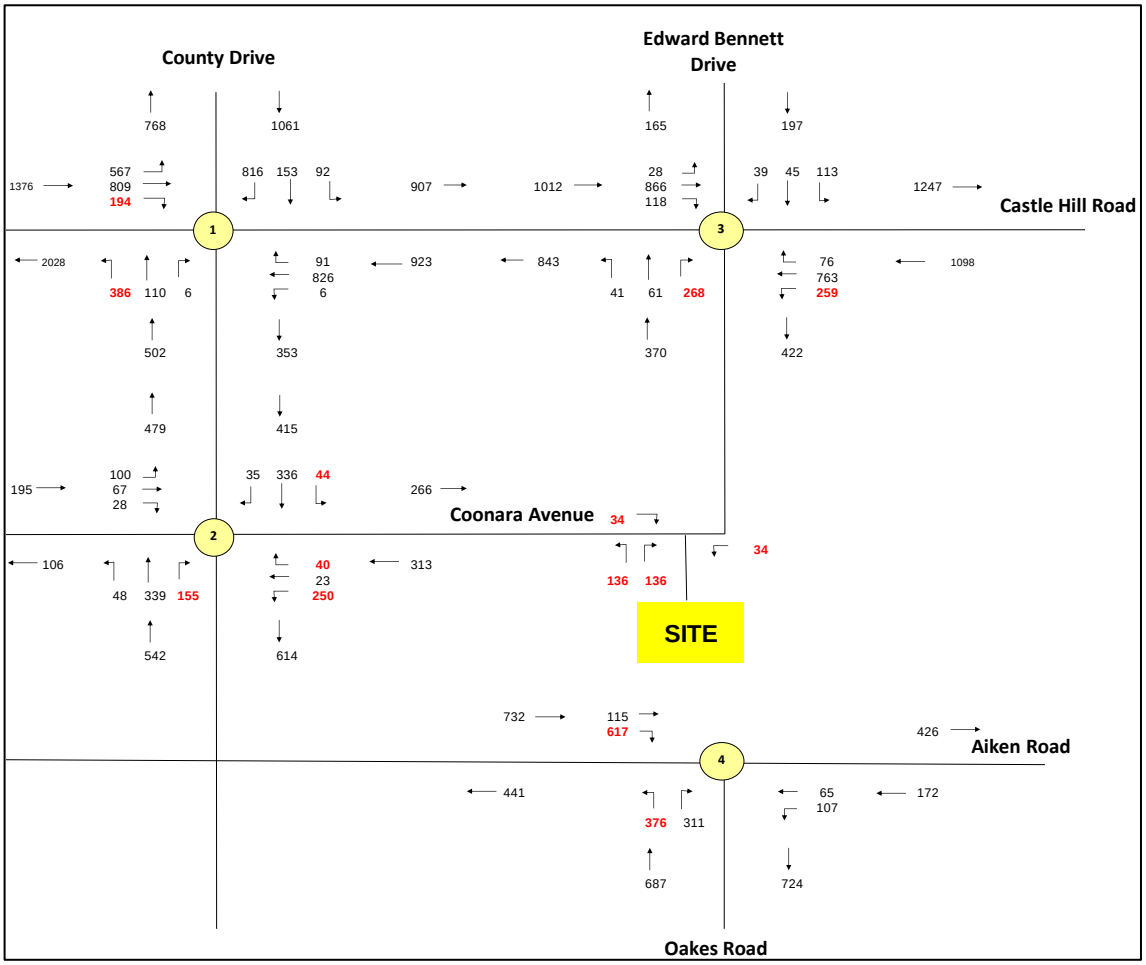
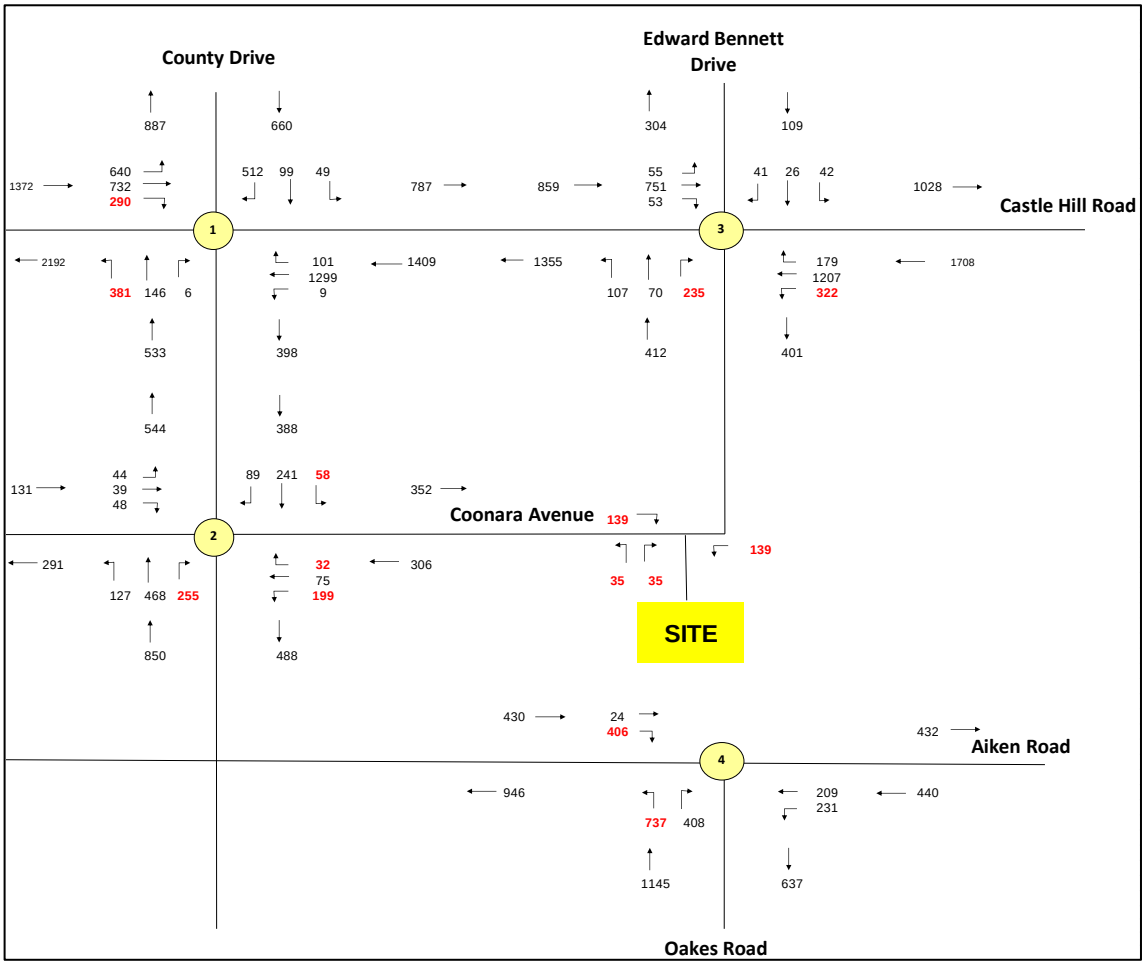


Figure 3.15: Scenario 3 Total Traffic – PM Peak Hour



3.2 Traffic Impact Assessment

All four intersections were assessed in SIDRA using volumes estimated for the three distribution scenarios. The LOS results are summarised in Table 3.2 with detailed results provided in Appendix B.

Table 3.2: Level of Service Summary

Intersection	Peak	Existing Conditions	Scenario 1	Scenario 2	Scenario 3
Highs Road/ Castle Hill Road/ County Drive	AM	C	C	C	C
	PM	D	D	D	D
Coonara Avenue/ Highs Road/ Taylor Street	AM	A	A	A	A
	PM	A	A	A	A
Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive	AM	C	C	C	C
	PM	C	D	C	C
Aiken Road/ Oakes Road	AM	D	F	F	F
	PM	A	A	A	A

With the development traffic, all four intersections are expected to operate at similar levels (acceptable LOS D or better) which is comparable to the existing conditions for both the AM and the PM peak hours for all scenarios tested. The Aiken Road/ Oakes Road roundabout is operating at capacity under existing condition and the additional development traffic leads to its deterioration in performance. As outlined in Section 2, the operation of this roundabout is impacted by the upstream queues and should this constraint be removed, the roundabout itself is expected to perform at acceptable levels. Therefore, the impacts from the development traffic is considered minimal at this roundabout and it only exacerbates the existing congestion issues.

Scenario 1 Performance

The performance of all four intersections is summarised in Table 3.3.

Table 3.3: Scenario 1 Operating Conditions

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Highs Road/ Castle Hill Road/ County Drive	AM	0.95	40	163	C
	PM	0.95	46	305	D
Coonara Avenue/ Highs Road/ Taylor Street	AM	0.10	10	3	A
	PM	0.08	10	2	A
Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive	AM	0.94	42	234	C
	PM	0.92	46	437	D
Aiken Road/ Oakes Road	AM	1.04	87	332	F
	PM	0.73	10	27	A

The following can be observed from Scenario 1 results:

- Except for the Aiken Road/ Oakes Road roundabout, all intersections are performing at acceptable LOS D or better
- Long queues (>200 meters) and a high DOS (>0.9) are observed at Highs Road/ Castle Hill Road/ County Drive intersection indicating that the intersection is operating at capacity during the PM peak hour
- Long queues (>200 meters) and a high DOS (>0.9) are observed at Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive intersection indicating that the intersection is operating at capacity during the PM peak hour

Scenario 2 Performance

The performance of all four intersections is summarised in Table 3.4

Table 3.4: Scenario 2 Operating Conditions

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Highs Road/ Castle Hill Road/ County Drive	AM	0.95	42	178	C
	PM	0.96	49	318	D
Coonara Avenue/ Highs Road/ Taylor Street	AM	0.12	10	3	A
	PM	0.09	10	3	A
Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive	AM	0.92	36	181	C
	PM	0.94	36	323	C
Aiken Road/ Oakes Road	AM	1.29	284	979	F
	PM	0.82	11	5	A

The following can be observed from Scenario 2 results:

- Except for the Aiken Road/ Oakes Road roundabout, all intersections are performing at acceptable LOS D or better
- Long queues (>200 meters) and a high DOS (>0.9) are observed at Highs Road/ Castle Hill Road/ County Drive intersection indicating that the intersection is operating at capacity during the PM peak hour
- Long queues (>200 meters) and a high DOS (>0.9) are observed at Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive intersection indicating that the intersection is operating at capacity during the PM peak hour

Scenario 3 Performance

The performance of all four intersections is summarised in Table 3.5

Table 3.5: Scenario 3 Operating Conditions

Intersection	Peak	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Highs Road/ Castle Hill Road/ County Drive	AM	0.92	41	176	C
	PM	0.97	53	309	D
Coonara Avenue/ Highs Road/ Taylor Street	AM	0.11	10	4	A
	PM	0.08	10	3	A
Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive	AM	0.93	39	208	C
	PM	0.88	40	364	C
Aiken Road/ Oakes Road	AM	1.17	180	643	F
	PM	0.52	11	29	A

The following can be observed from Scenario 3 results:

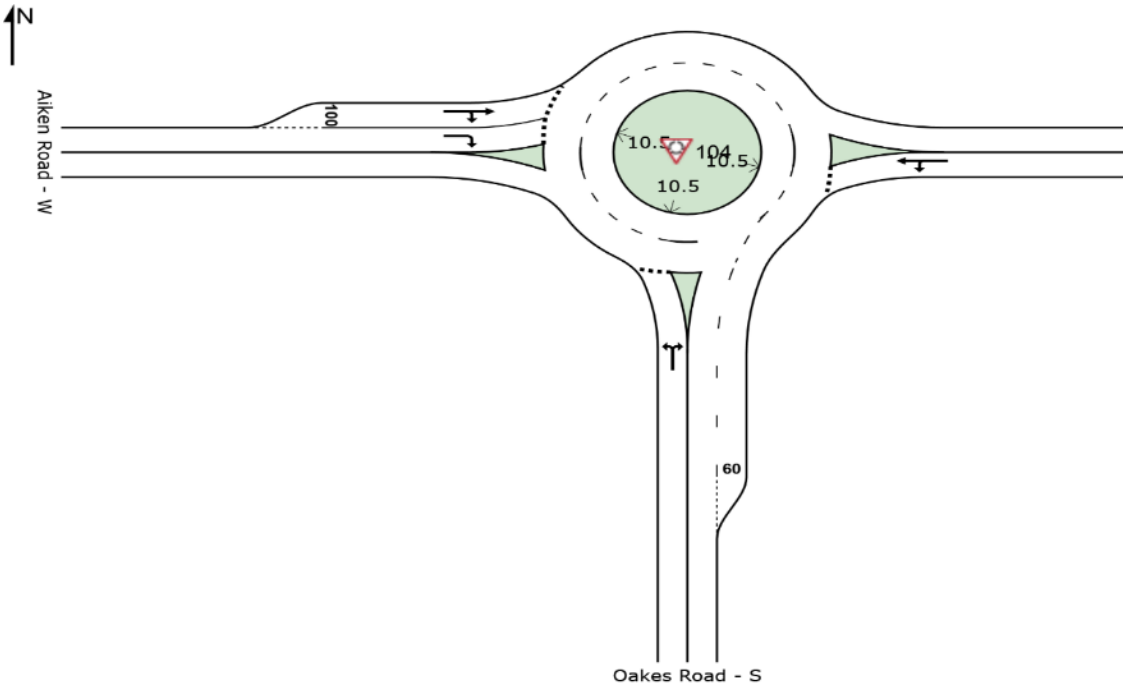
- Except for the Aiken Road/ Oakes Road roundabout, all intersections are performing at acceptable LOS D or better
- Long queues (>200 meters) and a high DOS (>0.9) are observed at Highs Road/ Castle Hill Road/ County Drive intersection indicating that the intersection is operating at capacity during the PM peak hour
- Long queues (>200 meters) and a high DOS (>0.9) are observed at Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive intersection indicating that the intersection is operating at capacity during both AM and PM peak hour

Mitigation Measures

As discussed in Section 3.1.2, travel patterns in the vicinity of the site are likely to change due to the NorthConnex and Sydney Metro opening in year 2019. As such it is expected that congestion levels at Castle Hill Road and Pennant Hills Road improve which may attract some of the existing rut running trips to revert back to the arterial road network. This change in travel patterns offers opportunities for improved performance at the Aiken Road/ Oakes Road intersection.

In case the future congestion levels remain at the level observed currently, a potential upgrade option was assessed at the Aiken Road/ Oakes Road roundabout. A layout change was assessed for Scenario 2 conditions as this scenario generates the highest proportion of development traffic at this intersection. The proposed layout is shown in Figure 3.16.

Figure 3.16: Proposed Layout at Aiken Road / Oakes Road intersection



The dual right turn provides additional storage capacity and the SIDRA results illustrate that the intersection performs at LOS B and has a DOS of 0.85. Detailed SIDRA results are provided in Appendix B.

3.3 Potential Impact on buses with and without the proposed development traffic

The West Pennant Hills Bus Priority Measures Business Case was prepared by Cardno in June 2010 (the Bus Priority Cardno Report). In general, it proposes to provide dedicated bus lane along Highs Road and Aiken Road all the way to Oakes Road Roundabout. As the program provides a separate bus lane, it would be expected that impacts to bus travel times resulting from the additional traffic generated by the development would be minimal. Notwithstanding, any additional traffic at intersections where bus priorities cannot be incorporated (give-way or roundabout intersection) is likely to increase delays to bus travel times.

Given the amount of infrastructure upgrades within the area, the travel patterns and levels of congestion are likely to change with some local traffic routes likely to experience reductions in volumes. However, the extent and probability of those changes is still uncertain and outside the scope of this assessment.

4. Conclusion

Based on the analysis and discussions presented within this report it can be concluded the additional traffic generated by the proposed development is expected to have marginal impact on the performance of the existing network. The results of SIDRA analysis indicate that there are existing capacity constraints at Castle Hill Road, Oakes Road and Aiken Road. The opening of NorthConnex is expected to reduce traffic volumes on the arterial road network, which in turn may relieve congestion on local roads.

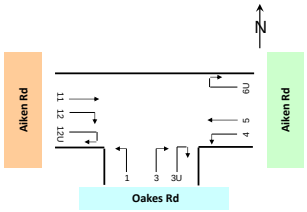
The Aiken Road/ Oakes Road roundabout is currently performing at capacity and any increase in traffic will lead to long queues and delays at this roundabout. The poor performance of this intersection is attributed to downstream queues reaching the roundabout and reducing its capacity. Therefore, the poor performance of this roundabout I cannot be directly attributed to the development traffic as the additional traffic only exacerbates existing issues.

Appendix A

Survey Results

Job No.	: N4220
Client	: GTA
Suburb	: West Pennant Hills
Location	: 1. Aiken Rd / Oakes Rd
Day/Date	: Tue, 5th June 2018
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies



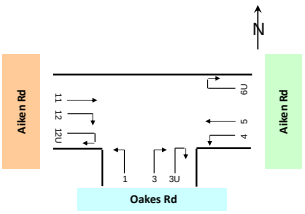
Approach	**Oakes Rd**									**Aiken Rd**									
Direction	**Direction 1 (Left Turn)**				**Direction 3 (Right Turn)**			**Direction 3U (U Turn)**			**Direction 4 (Left Turn)**			**Direction 5 (Through)**				**Direction 6U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**		**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**		**Lights**	**Heavies**	**Total**
7:00 to 7:15	35	1	**36**		62	2	**64**	1	0	**1**	39	0	**39**	12	2	**14**		1	0	**1**
7:15 to 7:30	45	1	**46**		77	0	**77**	0	0	**0**	26	2	**28**	11	4	**15**		0	0	**0**
7:30 to 7:45	58	1	**59**		49	1	**50**	8	0	**8**	25	1	**26**	9	2	**11**		1	0	**1**
7:45 to 8:00	69	3	**72**		100	0	**100**	0	0	**0**	30	0	**30**	15	2	**17**		1	0	**1**
8:00 to 8:15	79	1	**80**		74	3	**77**	1	0	**1**	26	0	**26**	14	2	**16**		0	0	**0**
8:15 to 8:30	81	3	**84**		84	0	**84**	4	0	**4**	26	0	**26**	17	0	**17**		0	1	**1**
8:30 to 8:45	85	1	**86**		79	0	**79**	1	0	**1**	28	4	**32**	13	1	**14**		1	2	**3**
8:45 to 9:00	95	2	**97**		68	3	**71**	0	0	**0**	22	1	**23**	17	1	**18**		0	0	**0**
AM Totals	**547**	**13**	**560**		**593**	**9**	**602**	**15**	**0**	**15**	**222**	**8**	**230**	**108**	**14**	**122**		**4**	**3**	**7**
16:00 to 16:15	134	3	**137**		110	1	**111**	3	0	**3**	49	1	**50**	39	1	**40**		0	0	**0**
16:15 to 16:30	126	2	**128**		112	0	**112**	0	0	**0**	59	1	**60**	31	1	**32**		1	0	**1**
16:30 to 16:45	149	1	**150**		109	1	**110**	2	0	**2**	56	0	**56**	41	0	**41**		0	0	**0**
16:45 to 17:00	152	0	**152**		105	0	**105**	5	0	**5**	65	0	**65**	48	1	**49**		1	0	**1**
17:00 to 17:15	147	2	**149**		96	0	**96**	2	0	**2**	60	0	**60**	65	2	**67**		0	0	**0**
17:15 to 17:30	168	0	**168**		96	1	**97**	1	0	**1**	50	0	**50**	51	1	**52**		1	0	**1**
17:30 to 17:45	159	2	**161**		75	0	**75**	2	0	**2**	49	0	**49**	53	3	**56**		1	0	**1**
17:45 to 18:00	172	1	**173**		81	0	**81**	1	0	**1**	62	0	**62**	54	2	**56**		0	0	**0**
PM Totals	**1,207**	**11**	**1,218**		**784**	**3**	**787**	**16**	**0**	**16**	**450**	**2**	**452**	**382**	**11**	**393**		**4**	**0**	**4**

Approach				**Aiken Rd**								
Direction				**Direction 11 (Through)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period				**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15				23	2	**25**	226	1	**227**	0	0	**0**
7:15 to 7:30				28	6	**34**	193	1	**194**	0	0	**0**
7:30 to 7:45				27	4	**31**	142	2	**144**	0	0	**0**
7:45 to 8:00				19	3	**22**	103	1	**104**	0	0	**0**
8:00 to 8:15				20	4	**24**	88	0	**88**	0	0	**0**
8:15 to 8:30				35	6	**41**	161	2	**163**	0	0	**0**
8:30 to 8:45				22	1	**23**	90	0	**90**	0	0	**0**
8:45 to 9:00				24	3	**27**	157	3	**160**	0	0	**0**
AM Totals				**198**	**29**	**227**	**1,160**	**10**	**1,170**	**0**	**0**	**0**
16:00 to 16:15				10	2	**12**	113	1	**114**	0	0	**0**
16:15 to 16:30				7	1	**8**	103	0	**103**	0	0	**0**
16:30 to 16:45				5	0	**5**	110	1	**111**	1	0	**1**
16:45 to 17:00				5	1	**6**	99	0	**99**	0	0	**0**
17:00 to 17:15				6	0	**6**	80	2	**82**	0	0	**0**
17:15 to 17:30				7	0	**7**	84	0	**84**	0	0	**0**
17:30 to 17:45				8	1	**9**	102	1	**103**	0	0	**0**
17:45 to 18:00				13	1	**14**	89	1	**90**	0	0	**0**
PM Totals				**61**	**6**	**67**	**780**	**6**	**786**	**1**	**0**	**1**

Job No. : N4220
Client : GTA
Suburb : West Pennant Hills
Location : 1. Aiken Rd / Oakes Rd

Day/Date : Tue, 5th June 2018
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

MATRIX Traffic and Transport Data

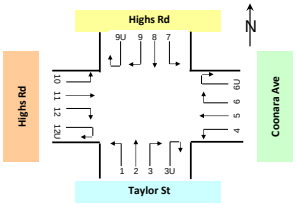


Approach	Oakes Rd												Aiken Rd											
Direction	Direction 1 (Left Turn)				Direction 3 (Right Turn)				Direction 3U (U Turn)				Direction 4 (Left Turn)				Direction 5 (Through)				Direction 6U (U Turn)			
Time Period	Lights	Heavies	Total		Lights	Heavies	Total		Lights	Heavies	Total		Lights	Heavies	Total		Lights	Heavies	Total		Lights	Heavies	Total	
7:00 to 8:00	207	6	**213**		288	3	**291**		9	0	**9**		120	3	**123**		47	10	**57**		3	0	**3**	
7:15 to 8:15	251	6	**257**		300	4	**304**		9	0	**9**		107	3	**110**		49	10	**59**		2	0	**2**	
7:30 to 8:30	287	8	**295**		307	4	**311**		13	0	**13**		107	1	**108**		55	6	**61**		2	1	**3**	
7:45 to 8:45	314	8	**322**		337	3	**340**		6	0	**6**		110	4	**114**		59	5	**64**		2	3	**5**	
8:00 to 9:00	340	7	**347**		305	6	**311**		6	0	**6**		102	5	**107**		61	4	**65**		1	3	**4**	
AM Totals	**547**	**13**	**560**		**593**	**9**	**602**		**15**	**0**	**15**		**222**	**8**	**230**		**108**	**14**	**122**		**4**	**3**	**7**	
16:00 to 17:00	561	6	**567**		436	2	**438**		10	0	**10**		229	2	**231**		159	3	**162**		2	0	**2**	
16:15 to 17:15	574	5	**579**		422	1	**423**		9	0	**9**		240	1	**241**		185	4	**189**		2	0	**2**	
16:30 to 17:30	616	3	**619**		406	2	**408**		10	0	**10**		231	0	**231**		205	4	**209**		2	0	**2**	
16:45 to 17:45	626	4	**630**		372	1	**373**		10	0	**10**		224	0	**224**		217	7	**224**		3	0	**3**	
17:00 to 18:00	646	5	**651**		348	1	**349**		6	0	**6**		221	0	**221**		223	8	**231**		2	0	**2**	
PM Totals	**1,207**	**11**	**1,218**		**784**	**3**	**787**		**16**	**0**	**16**		**450**	**2**	**452**		**382**	**11**	**393**		**4**	**0**	**4**	

Approach					Aiken Rd									
Direction					Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)			
Time Period					Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
7:00 to 8:00					97	15	**112**	664	5	**669**	0	0	**0**	
7:15 to 8:15					94	17	**111**	526	4	**530**	0	0	**0**	
7:30 to 8:30					101	17	**118**	494	5	**499**	0	0	**0**	
7:45 to 8:45					96	14	**110**	442	3	**445**	0	0	**0**	
8:00 to 9:00					101	14	**115**	496	5	**501**	0	0	**0**	
AM Totals					**198**	**29**	**227**	**1,160**	**10**	**1,170**	**0**	**0**	**0**	
16:00 to 17:00					27	4	**31**	425	2	**427**	1	0	**1**	
16:15 to 17:15					23	2	**25**	392	3	**395**	1	0	**1**	
16:30 to 17:30					23	1	**24**	373	3	**376**	1	0	**1**	
16:45 to 17:45					26	2	**28**	365	3	**368**	0	0	**0**	
17:00 to 18:00					34	2	**36**	355	4	**359**	0	0	**0**	
PM Totals					**61**	**6**	**67**	**780**	**6**	**786**	**1**	**0**	**1**	

Job No.	: N4220
Client	: GTA
Suburb	: West Pennant Hills
Location	: 2. Coonara Ave / Highs Rd / Taylor St
Day/Date	: Tue, 5th June 2018
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

MATRIX Traffic and Transport Data



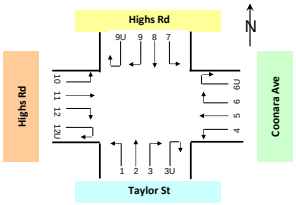
Classifications	**Class 1**	**Class 2**
	Lights	Heavies

Approach	**Taylor St**												**Coonara Ave**											
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**			**Direction 3 (Right Turn)**			**Direction 3U (U Turn)**			**Direction 4 (Left Turn)**			**Direction 5 (Through)**			**Direction 6 (Right Turn)**			**Direction 6U (U Turn)**		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	7	0	**7**	41	0	**41**	19	1	**20**	2	0	**2**	35	0	**35**	2	0	**2**	9	0	**9**	2	0	**2**
7:15 to 7:30	5	4	**9**	46	0	**46**	15	0	**15**	3	0	**3**	36	2	**38**	5	0	**5**	3	1	**4**	2	1	**3**
7:30 to 7:45	4	1	**5**	50	2	**52**	21	0	**21**	6	0	**6**	39	2	**41**	4	0	**4**	7	0	**7**	3	1	**4**
7:45 to 8:00	12	0	**12**	65	1	**66**	16	1	**17**	1	0	**1**	40	0	**40**	4	0	**4**	2	1	**3**	1	0	**1**
8:00 to 8:15	10	4	**14**	97	2	**99**	26	0	**26**	2	0	**2**	34	0	**34**	2	0	**2**	4	1	**5**	1	0	**1**
8:15 to 8:30	7	1	**8**	83	2	**85**	32	1	**33**	4	0	**4**	37	0	**37**	5	0	**5**	3	1	**4**	0	0	**0**
8:30 to 8:45	9	0	**9**	73	0	**73**	37	0	**37**	6	0	**6**	26	0	**26**	8	0	**8**	3	1	**4**	0	0	**0**
8:45 to 9:00	15	2	**17**	80	2	**82**	30	0	**30**	8	0	**8**	37	0	**37**	8	0	**8**	7	0	**7**	1	1	**2**
AM Totals	**69**	**12**	**81**	**535**	**9**	**544**	**196**	**3**	**199**	**32**	**0**	**32**	**284**	**4**	**288**	**38**	**0**	**38**	**38**	**5**	**43**	**10**	**3**	**13**
16:00 to 16:15	31	3	**34**	90	2	**92**	36	1	**37**	3	0	**3**	43	0	**43**	16	2	**18**	5	1	**6**	3	0	**3**
16:15 to 16:30	21	1	**22**	96	2	**98**	31	2	**33**	2	0	**2**	27	0	**27**	8	0	**8**	10	1	**11**	0	1	**1**
16:30 to 16:45	23	0	**23**	115	1	**116**	29	0	**29**	2	0	**2**	54	0	**54**	19	0	**19**	10	0	**10**	0	0	**0**
16:45 to 17:00	30	1	**31**	119	3	**122**	37	0	**37**	4	0	**4**	29	1	**30**	17	0	**17**	7	0	**7**	0	0	**0**
17:00 to 17:15	42	1	**43**	109	2	**111**	33	0	**33**	1	0	**1**	39	1	**40**	18	0	**18**	2	1	**3**	0	0	**0**
17:15 to 17:30	30	0	**30**	117	2	**119**	38	0	**38**	0	0	**0**	45	0	**45**	21	0	**21**	6	1	**7**	1	1	**2**
17:30 to 17:45	34	3	**37**	113	2	**115**	34	0	**34**	2	0	**2**	57	1	**58**	23	0	**23**	11	0	**11**	1	0	**1**
17:45 to 18:00	24	0	**24**	115	2	**117**	42	0	**42**	2	0	**2**	32	0	**32**	15	0	**15**	7	0	**7**	0	1	**1**
PM Totals	**235**	**9**	**244**	**874**	**16**	**890**	**280**	**3**	**283**	**16**	**0**	**16**	**326**	**3**	**329**	**137**	**2**	**139**	**58**	**4**	**62**	**5**	**3**	**8**

Approach	**Highs Rd**												**Highs Rd**											
Direction	**Direction 7 (Left Turn)**			**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 11 (Through)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	5	0	**5**	123	4	**127**	5	4	**9**	3	0	**3**	19	0	**19**	16	2	**18**	49	4	**53**	0	0	**0**
7:15 to 7:30	7	2	**9**	139	6	**145**	8	4	**12**	6	0	**6**	21	1	**22**	20	1	**21**	43	4	**47**	0	0	**0**
7:30 to 7:45	5	1	**6**	89	5	**94**	8	3	**11**	2	0	**2**	17	4	**21**	18	1	**19**	32	1	**33**	0	0	**0**
7:45 to 8:00	2	0	**2**	80	4	**84**	7	4	**11**	0	0	**0**	28	0	**28**	11	0	**11**	31	3	**34**	0	0	**0**
8:00 to 8:15	5	1	**6**	66	2	**68**	6	3	**9**	1	0	**1**	29	1	**30**	16	1	**17**	20	4	**24**	0	0	**0**
8:15 to 8:30	8	0	**8**	93	2	**95**	9	2	**11**	3	0	**3**	35	0	**35**	18	2	**20**	47	5	**52**	0	0	**0**
8:30 to 8:45	8	0	**8**	83	2	**85**	5	0	**5**	1	0	**1**	17	0	**17**	18	0	**18**	29	0	**29**	0	0	**0**
8:45 to 9:00	16	1	**17**	84	4	**88**	9	1	**10**	1	0	**1**	16	2	**18**	11	1	**12**	22	1	**23**	0	0	**0**
AM Totals	**56**	**5**	**61**	**757**	**29**	**786**	**57**	**21**	**78**	**17**	**0**	**17**	**182**	**8**	**190**	**128**	**8**	**136**	**273**	**22**	**295**	**0**	**0**	**0**
16:00 to 16:15	11	0	**11**	74	0	**74**	22	1	**23**	3	0	**3**	19	3	**22**	10	0	**10**	12	0	**12**	0	0	**0**
16:15 to 16:30	9	1	**10**	61	1	**62**	17	0	**17**	4	0	**4**	13	3	**16**	12	0	**12**	14	1	**15**	0	0	**0**
16:30 to 16:45	3	0	**3**	60	0	**60**	22	1	**23**	1	0	**1**	7	0	**7**	9	0	**9**	12	1	**13**	0	0	**0**
16:45 to 17:00	11	1	**12**	56	1	**57**	14	0	**14**	2	0	**2**	7	1	**8**	9	0	**9**	13	0	**13**	0	0	**0**
17:00 to 17:15	10	0	**10**	55	0	**55**	19	0	**19**	0	0	**0**	15	0	**15**	11	0	**11**	8	0	**8**	0	0	**0**
17:15 to 17:30	11	1	**12**	69	0	**69**	32	1	**33**	4	0	**4**	13	1	**14**	10	0	**10**	13	1	**14**	0	0	**0**
17:30 to 17:45	7	0	**7**	73	1	**74**	20	0	**20**	2	0	**2**	12	1	**13**	13	0	**13**	9	0	**9**	0	0	**0**
17:45 to 18:00	14	1	**15**	68	0	**68**	10	0	**10**	6	0	**6**	5	2	**7**	12	0	**12**	4	0	**4**	0	0	**0**
PM Totals	**76**	**4**	**80**	**516**	**3**	**519**	**156**	**3**	**159**	**22**	**0**	**22**	**91**	**11**	**102**	**86**	**0**	**86**	**85**	**3**	**88**	**0**	**0**	**0**

Job No. : N4220
Client : GTA
Suburb : West Pennant Hills
Location : 2. Coonara Ave / Highs Rd / Taylor St

Day/Date : Tue, 5th June 2018
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

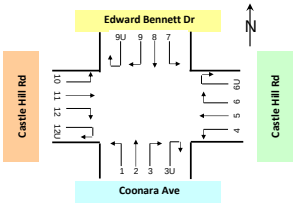


Approach	Taylor St												Coonara Ave											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	28	5	**33**	202	3	**205**	71	2	**73**	12	0	**12**	150	4	**154**	15	0	**15**	21	2	**23**	8	2	**10**
7:15 to 8:15	31	9	**40**	258	5	**263**	78	1	**79**	12	0	**12**	149	4	**153**	15	0	**15**	16	3	**19**	7	2	**9**
7:30 to 8:30	33	6	**39**	295	7	**302**	95	2	**97**	13	0	**13**	150	2	**152**	15	0	**15**	16	3	**19**	5	1	**6**
7:45 to 8:45	38	5	**43**	318	5	**323**	111	2	**113**	13	0	**13**	137	0	**137**	19	0	**19**	12	4	**16**	2	0	**2**
8:00 to 9:00	41	7	**48**	333	6	**339**	125	1	**126**	20	0	**20**	134	0	**134**	23	0	**23**	17	3	**20**	2	1	**3**
AM Totals	**69**	**12**	**81**	**535**	**9**	**544**	**196**	**3**	**199**	**32**	**0**	**32**	**284**	**4**	**288**	**38**	**0**	**38**	**38**	**5**	**43**	**10**	**3**	**13**
16:00 to 17:00	105	5	**110**	420	8	**428**	133	3	**136**	11	0	**11**	153	1	**154**	60	2	**62**	32	2	**34**	3	1	**4**
16:15 to 17:15	116	3	**119**	439	8	**447**	130	2	**132**	9	0	**9**	149	2	**151**	62	0	**62**	29	2	**31**	0	1	**1**
16:30 to 17:30	125	2	**127**	460	8	**468**	137	0	**137**	7	0	**7**	167	2	**169**	75	0	**75**	25	2	**27**	1	1	**2**
16:45 to 17:45	136	5	**141**	458	9	**467**	142	0	**142**	7	0	**7**	170	3	**173**	79	0	**79**	26	2	**28**	2	1	**3**
17:00 to 18:00	130	4	**134**	454	8	**462**	147	0	**147**	5	0	**5**	173	2	**175**	77	0	**77**	26	2	**28**	2	2	**4**
PM Totals	**235**	**9**	**244**	**874**	**16**	**890**	**280**	**3**	**283**	**16**	**0**	**16**	**326**	**3**	**329**	**137**	**2**	**139**	**58**	**4**	**62**	**5**	**3**	**8**

Approach	Highs Rd												Highs Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	19	3	**22**	431	19	**450**	28	15	**43**	11	0	**11**	85	5	**90**	65	4	**69**	155	12	**167**	0	0	**0**
7:15 to 8:15	19	4	**23**	374	17	**391**	29	14	**43**	9	0	**9**	95	6	**101**	65	3	**68**	126	12	**138**	0	0	**0**
7:30 to 8:30	20	2	**22**	328	13	**341**	30	12	**42**	6	0	**6**	109	5	**114**	63	4	**67**	130	13	**143**	0	0	**0**
7:45 to 8:45	23	1	**24**	322	10	**332**	27	9	**36**	5	0	**5**	109	1	**110**	63	3	**66**	127	12	**139**	0	0	**0**
8:00 to 9:00	37	2	**39**	326	10	**336**	29	6	**35**	6	0	**6**	97	3	**100**	63	4	**67**	118	10	**128**	0	0	**0**
AM Totals	**56**	**5**	**61**	**757**	**29**	**786**	**57**	**21**	**78**	**17**	**0**	**17**	**182**	**8**	**190**	**128**	**8**	**136**	**273**	**22**	**295**	**0**	**0**	**0**
16:00 to 17:00	34	2	**36**	251	2	**253**	75	2	**77**	10	0	**10**	46	7	**53**	40	0	**40**	51	2	**53**	0	0	**0**
16:15 to 17:15	33	2	**35**	232	2	**234**	72	1	**73**	7	0	**7**	42	4	**46**	41	0	**41**	47	2	**49**	0	0	**0**
16:30 to 17:30	35	2	**37**	240	1	**241**	87	2	**89**	7	0	**7**	42	2	**44**	39	0	**39**	46	2	**48**	0	0	**0**
16:45 to 17:45	39	2	**41**	253	2	**255**	85	1	**86**	8	0	**8**	47	3	**50**	43	0	**43**	43	1	**44**	0	0	**0**
17:00 to 18:00	42	2	**44**	265	1	**266**	81	1	**82**	12	0	**12**	45	4	**49**	46	0	**46**	34	1	**35**	0	0	**0**
PM Totals	**76**	**4**	**80**	**516**	**3**	**519**	**156**	**3**	**159**	**22**	**0**	**22**	**91**	**11**	**102**	**86**	**0**	**86**	**85**	**3**	**88**	**0**	**0**	**0**

Job No.	: N4220
Client	: GTA
Suburb	: West Pennant Hills
Location	: 3. Coonara Ave / Castle Hill Rd / Edward Bennett Dr
Day/Date	: Tue, 5th June 2018
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

MATRIX Traffic and Transport Data



Classifications	**Class 1**	**Class 2**
	Lights	Heavies

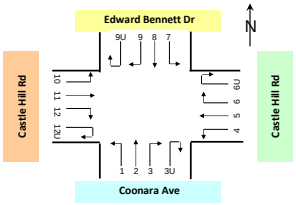
Approach	**Coonara Ave**												**Castle Hill Rd**											
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**			**Direction 3 (Right Turn)**			**Direction 3U (U Turn)**			**Direction 4 (Left Turn)**			**Direction 5 (Through)**			**Direction 6 (Right Turn)**			**Direction 6U (U Turn)**		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	2	0	**2**	1	0	**1**	23	1	**24**	0	0	**0**	41	0	**41**	133	11	**144**	3	1	**4**	0	0	**0**
7:15 to 7:30	5	1	**6**	5	0	**5**	34	4	**38**	0	0	**0**	39	2	**41**	124	16	**140**	3	1	**4**	0	0	**0**
7:30 to 7:45	3	0	**3**	5	1	**6**	31	2	**33**	0	0	**0**	33	1	**34**	148	18	**166**	4	0	**4**	0	0	**0**
7:45 to 8:00	6	0	**6**	8	0	**8**	24	3	**27**	0	0	**0**	45	3	**48**	170	20	**190**	11	1	**12**	0	0	**0**
8:00 to 8:15	10	1	**11**	21	1	**22**	22	0	**22**	0	0	**0**	39	2	**41**	158	20	**178**	15	3	**18**	0	0	**0**
8:15 to 8:30	11	1	**12**	19	0	**19**	26	2	**28**	0	0	**0**	50	0	**50**	190	19	**209**	17	3	**20**	0	0	**0**
8:30 to 8:45	8	1	**9**	7	1	**8**	40	0	**40**	0	0	**0**	53	2	**55**	173	11	**184**	22	0	**22**	0	0	**0**
8:45 to 9:00	7	2	**9**	12	0	**12**	40	2	**42**	0	0	**0**	77	2	**79**	183	9	**192**	15	1	**16**	0	0	**0**
AM Totals	**52**	**6**	**58**	**78**	**3**	**81**	**240**	**14**	**254**	**0**	**0**	**0**	**377**	**12**	**389**	**1,279**	**124**	**1,403**	**90**	**10**	**100**	**0**	**0**	**0**
16:00 to 16:15	17	0	**17**	16	0	**16**	41	0	**41**	0	0	**0**	49	3	**52**	245	12	**257**	27	3	**30**	0	0	**0**
16:15 to 16:30	22	1	**23**	12	0	**12**	52	2	**54**	0	0	**0**	27	2	**29**	320	10	**330**	38	4	**42**	0	0	**0**
16:30 to 16:45	18	0	**18**	13	0	**13**	45	1	**46**	0	0	**0**	43	1	**44**	296	6	**302**	32	2	**34**	0	0	**0**
16:45 to 17:00	27	0	**27**	15	0	**15**	25	2	**27**	0	0	**0**	35	1	**36**	309	8	**317**	42	2	**44**	0	0	**0**
17:00 to 17:15	26	0	**26**	23	0	**23**	58	0	**58**	0	0	**0**	54	1	**55**	285	5	**290**	48	1	**49**	0	0	**0**
17:15 to 17:30	36	0	**36**	19	0	**19**	67	2	**69**	0	0	**0**	46	2	**48**	295	3	**298**	49	3	**52**	0	0	**0**
17:30 to 17:45	28	0	**28**	26	0	**26**	61	0	**61**	0	0	**0**	57	2	**59**	278	3	**281**	41	2	**43**	0	0	**0**
17:45 to 18:00	18	0	**18**	24	0	**24**	52	1	**53**	0	0	**0**	42	3	**45**	311	2	**313**	45	5	**50**	0	0	**0**
PM Totals	**192**	**1**	**193**	**148**	**0**	**148**	**401**	**8**	**409**	**0**	**0**	**0**	**353**	**15**	**368**	**2,339**	**49**	**2,388**	**322**	**22**	**344**	**0**	**0**	**0**

Approach	**Edward Bennett Dr**												**Castle Hill Rd**											
Direction	**Direction 7 (Left Turn)**			**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 11 (Through)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	22	5	**27**	7	0	**7**	4	1	**5**	0	0	**0**	4	2	**6**	251	9	**260**	12	1	**13**	0	0	**0**
7:15 to 7:30	36	2	**38**	8	0	**8**	5	0	**5**	0	0	**0**	3	1	**4**	311	8	**319**	14	0	**14**	0	0	**0**
7:30 to 7:45	25	4	**29**	7	0	**7**	14	0	**14**	0	0	**0**	6	3	**9**	256	12	**268**	16	2	**18**	0	0	**0**
7:45 to 8:00	33	5	**38**	7	0	**7**	4	0	**4**	0	0	**0**	6	0	**6**	200	5	**205**	18	2	**20**	0	0	**0**
8:00 to 8:15	19	3	**22**	12	0	**12**	5	0	**5**	0	0	**0**	9	0	**9**	204	10	**214**	30	0	**30**	0	0	**0**
8:15 to 8:30	27	3	**30**	15	0	**15**	10	0	**10**	0	0	**0**	6	0	**6**	206	8	**214**	16	1	**17**	0	0	**0**
8:30 to 8:45	28	2	**30**	5	0	**5**	16	0	**16**	0	0	**0**	5	0	**5**	210	3	**213**	31	0	**31**	0	0	**0**
8:45 to 9:00	30	1	**31**	13	0	**13**	7	1	**8**	0	0	**0**	6	2	**8**	213	12	**225**	40	0	**40**	1	0	**1**
AM Totals	**220**	**25**	**245**	**74**	**0**	**74**	**65**	**2**	**67**	**0**	**0**	**0**	**45**	**8**	**53**	**1,851**	**67**	**1,918**	**177**	**6**	**183**	**1**	**0**	**1**
16:00 to 16:15	18	2	**20**	9	1	**10**	4	1	**5**	0	0	**0**	6	1	**7**	143	22	**165**	8	0	**8**	0	0	**0**
16:15 to 16:30	13	2	**15**	2	1	**3**	4	1	**5**	0	0	**0**	13	1	**14**	191	10	**201**	10	1	**11**	0	0	**0**
16:30 to 16:45	11	0	**11**	9	0	**9**	19	1	**20**	0	0	**0**	13	2	**15**	192	8	**200**	14	0	**14**	0	0	**0**
16:45 to 17:00	13	1	**14**	5	0	**5**	11	0	**11**	0	0	**0**	13	2	**15**	186	8	**194**	10	1	**11**	1	0	**1**
17:00 to 17:15	9	2	**11**	7	0	**7**	5	0	**5**	0	0	**0**	12	1	**13**	161	5	**166**	7	0	**7**	0	0	**0**
17:15 to 17:30	5	1	**6**	5	0	**5**	5	0	**5**	0	0	**0**	12	0	**12**	186	5	**191**	21	0	**21**	0	0	**0**
17:30 to 17:45	11	0	**11**	2	0	**2**	4	0	**4**	0	0	**0**	4	0	**4**	146	3	**149**	9	0	**9**	0	0	**0**
17:45 to 18:00	14	1	**15**	7	0	**7**	5	0	**5**	0	0	**0**	11	0	**11**	179	0	**179**	9	0	**9**	0	0	**0**
PM Totals	**94**	**9**	**103**	**46**	**2**	**48**	**57**	**3**	**60**	**0**	**0**	**0**	**84**	**7**	**91**	**1,384**	**61**	**1,445**	**88**	**2**	**90**	**1**	**0**	**1**

Job No. : N4220
Client : GTA
Suburb : West Pennant Hills
Location : 3. Coonara Ave / Castle Hill Rd / Edward Bennett Dr

Day/Date : Tue, 5th June 2018
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

MATRIX Traffic and Transport Data

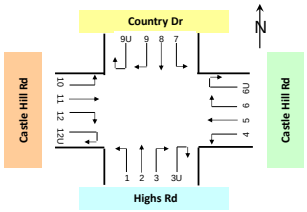


Approach	Coonara Ave												Castle Hill Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	16	1	**17**	19	1	**20**	112	10	**122**	0	0	**0**	158	6	**164**	575	65	**640**	21	3	**24**	0	0	**0**
7:15 to 8:15	24	2	**26**	39	2	**41**	111	9	**120**	0	0	**0**	156	8	**164**	600	74	**674**	33	5	**38**	0	0	**0**
7:30 to 8:30	30	2	**32**	53	2	**55**	103	7	**110**	0	0	**0**	167	6	**173**	666	77	**743**	47	7	**54**	0	0	**0**
7:45 to 8:45	35	3	**38**	55	2	**57**	112	5	**117**	0	0	**0**	187	7	**194**	691	70	**761**	65	7	**72**	0	0	**0**
8:00 to 9:00	36	5	**41**	59	2	**61**	128	4	**132**	0	0	**0**	219	6	**225**	704	59	**763**	69	7	**76**	0	0	**0**
AM Totals	**52**	**6**	**58**	**78**	**3**	**81**	**240**	**14**	**254**	**0**	**0**	**0**	**377**	**12**	**389**	**1,279**	**124**	**1,403**	**90**	**10**	**100**	**0**	**0**	**0**
16:00 to 17:00	84	1	**85**	56	0	**56**	163	5	**168**	0	0	**0**	154	7	**161**	1,170	36	**1,206**	139	11	**150**	0	0	**0**
16:15 to 17:15	93	1	**94**	63	0	**63**	180	5	**185**	0	0	**0**	159	5	**164**	1,210	29	**1,239**	160	9	**169**	0	0	**0**
16:30 to 17:30	107	0	**107**	70	0	**70**	195	5	**200**	0	0	**0**	178	5	**183**	1,185	22	**1,207**	171	8	**179**	0	0	**0**
16:45 to 17:45	117	0	**117**	83	0	**83**	211	4	**215**	0	0	**0**	192	6	**198**	1,167	19	**1,186**	180	8	**188**	0	0	**0**
17:00 to 18:00	108	0	**108**	92	0	**92**	238	3	**241**	0	0	**0**	199	8	**207**	1,169	13	**1,182**	183	11	**194**	0	0	**0**
PM Totals	**192**	**1**	**193**	**148**	**0**	**148**	**401**	**8**	**409**	**0**	**0**	**0**	**353**	**15**	**368**	**2,339**	**49**	**2,388**	**322**	**22**	**344**	**0**	**0**	**0**

Approach	Edward Bennett Dr												Castle Hill Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	116	16	**132**	29	0	**29**	27	1	**28**	0	0	**0**	19	6	**25**	1,018	34	**1,052**	60	5	**65**	0	0	**0**
7:15 to 8:15	113	14	**127**	34	0	**34**	28	0	**28**	0	0	**0**	24	4	**28**	971	35	**1,006**	78	4	**82**	0	0	**0**
7:30 to 8:30	104	15	**119**	41	0	**41**	33	0	**33**	0	0	**0**	27	3	**30**	866	35	**901**	80	5	**85**	0	0	**0**
7:45 to 8:45	107	13	**120**	39	0	**39**	35	0	**35**	0	0	**0**	26	0	**26**	820	26	**846**	95	3	**98**	0	0	**0**
8:00 to 9:00	104	9	**113**	45	0	**45**	38	1	**39**	0	0	**0**	26	2	**28**	833	33	**866**	117	1	**118**	1	0	**1**
AM Totals	**220**	**25**	**245**	**74**	**0**	**74**	**65**	**2**	**67**	**0**	**0**	**0**	**45**	**8**	**53**	**1,851**	**67**	**1,918**	**177**	**6**	**183**	**1**	**0**	**1**
16:00 to 17:00	55	5	**60**	25	2	**27**	38	3	**41**	0	0	**0**	45	6	**51**	712	48	**760**	42	2	**44**	1	0	**1**
16:15 to 17:15	46	5	**51**	23	1	**24**	39	2	**41**	0	0	**0**	51	6	**57**	730	31	**761**	41	2	**43**	1	0	**1**
16:30 to 17:30	38	4	**42**	26	0	**26**	40	1	**41**	0	0	**0**	50	5	**55**	725	26	**751**	52	1	**53**	1	0	**1**
16:45 to 17:45	38	4	**42**	19	0	**19**	25	0	**25**	0	0	**0**	41	3	**44**	679	21	**700**	47	1	**48**	1	0	**1**
17:00 to 18:00	39	4	**43**	21	0	**21**	19	0	**19**	0	0	**0**	39	1	**40**	672	13	**685**	46	0	**46**	0	0	**0**
PM Totals	**94**	**9**	**103**	**46**	**2**	**48**	**57**	**3**	**60**	**0**	**0**	**0**	**84**	**7**	**91**	**1,384**	**61**	**1,445**	**88**	**2**	**90**	**1**	**0**	**1**

Job No.	: N4220
Client	: GTA
Suburb	: West Pennant Hills
Location	: 4. Highs Rd / Castle Hill Rd / Country Dr
Day/Date	: Tue, 5th June 2018
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies



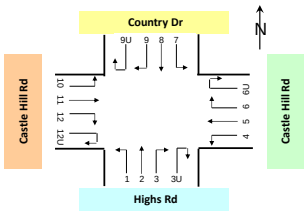
Approach	**Highs Rd**												**Castle Hill Rd**											
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**			**Direction 3 (Right Turn)**			**Direction 3U (U Turn)**			**Direction 4 (Left Turn)**			**Direction 5 (Through)**			**Direction 6 (Right Turn)**			**Direction 6U (U Turn)**		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	42	1	**43**	18	0	**18**	0	0	**0**	0	0	**0**	1	2	**3**	127	10	**137**	11	4	**15**	0	0	**0**
7:15 to 7:30	56	2	**58**	5	2	**7**	2	1	**3**	0	0	**0**	1	0	**1**	140	11	**151**	26	1	**27**	0	0	**0**
7:30 to 7:45	59	3	**62**	14	0	**14**	2	0	**2**	0	0	**0**	3	0	**3**	167	13	**180**	9	7	**16**	0	0	**0**
7:45 to 8:00	71	2	**73**	15	2	**17**	3	0	**3**	0	0	**0**	0	3	**3**	184	12	**196**	18	4	**22**	0	0	**0**
8:00 to 8:15	94	3	**97**	27	0	**27**	2	0	**2**	0	0	**0**	0	1	**1**	172	17	**189**	24	3	**27**	0	0	**0**
8:15 to 8:30	108	3	**111**	29	0	**29**	1	0	**1**	0	0	**0**	0	0	**0**	217	13	**230**	31	8	**39**	0	0	**0**
8:30 to 8:45	83	2	**85**	33	0	**33**	2	0	**2**	0	0	**0**	1	1	**2**	197	9	**206**	8	0	**8**	0	0	**0**
8:45 to 9:00	70	3	**73**	20	1	**21**	1	0	**1**	0	0	**0**	3	0	**3**	189	12	**201**	15	2	**17**	0	0	**0**
AM Totals	**583**	**19**	**602**	**161**	**5**	**166**	**13**	**1**	**14**	**0**	**0**	**0**	**9**	**7**	**16**	**1,393**	**97**	**1,490**	**142**	**29**	**171**	**0**	**0**	**0**
16:00 to 16:15	87	2	**89**	24	0	**24**	1	0	**1**	0	0	**0**	1	0	**1**	243	12	**255**	21	1	**22**	0	0	**0**
16:15 to 16:30	84	2	**86**	33	4	**37**	1	0	**1**	0	0	**0**	3	0	**3**	334	8	**342**	20	3	**23**	0	0	**0**
16:30 to 16:45	79	2	**81**	32	0	**32**	4	0	**4**	0	0	**0**	4	0	**4**	356	5	**361**	17	4	**21**	0	0	**0**
16:45 to 17:00	89	5	**94**	40	1	**41**	0	0	**0**	0	0	**0**	0	0	**0**	331	11	**342**	24	0	**24**	0	0	**0**
17:00 to 17:15	95	1	**96**	47	0	**47**	2	0	**2**	0	0	**0**	2	0	**2**	284	3	**287**	25	0	**25**	0	0	**0**
17:15 to 17:30	102	3	**105**	26	0	**26**	0	0	**0**	0	0	**0**	3	0	**3**	307	2	**309**	30	1	**31**	0	0	**0**
17:30 to 17:45	73	2	**75**	27	0	**27**	0	0	**0**	0	0	**0**	3	0	**3**	350	1	**351**	16	2	**18**	0	0	**0**
17:45 to 18:00	116	3	**119**	43	2	**45**	2	0	**2**	0	0	**0**	5	0	**5**	311	2	**313**	22	0	**22**	0	0	**0**
PM Totals	**725**	**20**	**745**	**272**	**7**	**279**	**10**	**0**	**10**	**0**	**0**	**0**	**21**	**0**	**21**	**2,516**	**44**	**2,560**	**175**	**11**	**186**	**0**	**0**	**0**

Approach	**Country Dr**												**Castle Hill Rd**											
Direction	**Direction 7 (Left Turn)**			**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 11 (Through)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	18	0	**18**	62	1	**63**	86	4	**90**	0	0	**0**	90	6	**96**	244	14	**258**	64	7	**71**	0	0	**0**
7:15 to 7:30	14	0	**14**	63	6	**69**	140	4	**144**	0	0	**0**	152	7	**159**	279	9	**288**	60	6	**66**	0	0	**0**
7:30 to 7:45	12	2	**14**	34	1	**35**	133	4	**137**	0	0	**0**	109	7	**116**	255	9	**264**	40	9	**49**	0	0	**0**
7:45 to 8:00	19	2	**21**	42	2	**44**	200	4	**204**	0	0	**0**	170	6	**176**	180	7	**187**	33	2	**35**	0	0	**0**
8:00 to 8:15	19	1	**20**	22	1	**23**	185	3	**188**	0	0	**0**	154	3	**157**	204	9	**213**	37	4	**41**	0	0	**0**
8:15 to 8:30	18	1	**19**	41	0	**41**	186	8	**194**	0	0	**0**	166	2	**168**	180	5	**185**	51	2	**53**	0	0	**0**
8:30 to 8:45	23	3	**26**	47	2	**49**	242	7	**249**	0	0	**0**	121	4	**125**	177	9	**186**	49	0	**49**	0	0	**0**
8:45 to 9:00	25	2	**27**	40	0	**40**	179	6	**185**	0	0	**0**	112	5	**117**	218	7	**225**	41	5	**46**	0	0	**0**
AM Totals	**148**	**11**	**159**	**351**	**13**	**364**	**1,351**	**40**	**1,391**	**0**	**0**	**0**	**1,074**	**40**	**1,114**	**1,737**	**69**	**1,806**	**375**	**35**	**410**	**0**	**0**	**0**
16:00 to 16:15	14	2	**16**	33	0	**33**	173	4	**177**	0	0	**0**	146	3	**149**	175	16	**191**	73	1	**74**	0	0	**0**
16:15 to 16:30	15	0	**15**	35	2	**37**	150	4	**154**	0	0	**0**	138	4	**142**	186	6	**192**	50	1	**51**	0	0	**0**
16:30 to 16:45	9	1	**10**	17	0	**17**	121	0	**121**	0	0	**0**	158	3	**161**	189	8	**197**	65	1	**66**	0	0	**0**
16:45 to 17:00	12	1	**13**	19	0	**19**	131	2	**133**	0	0	**0**	151	2	**153**	177	6	**183**	61	1	**62**	0	0	**0**
17:00 to 17:15	12	1	**13**	36	0	**36**	139	4	**143**	0	0	**0**	177	1	**178**	171	4	**175**	51	0	**51**	0	0	**0**
17:15 to 17:30	12	1	**13**	27	0	**27**	114	1	**115**	0	0	**0**	145	3	**148**	174	3	**177**	88	2	**90**	0	0	**0**
17:30 to 17:45	10	0	**10**	30	0	**30**	160	2	**162**	0	0	**0**	142	4	**146**	163	1	**164**	62	1	**63**	0	0	**0**
17:45 to 18:00	2	0	**2**	26	0	**26**	131	1	**132**	0	0	**0**	164	3	**167**	160	3	**163**	60	1	**61**	0	0	**0**
PM Totals	**86**	**6**	**92**	**223**	**2**	**225**	**1,119**	**18**	**1,137**	**0**	**0**	**0**	**1,221**	**23**	**1,244**	**1,395**	**47**	**1,442**	**510**	**8**	**518**	**0**	**0**	**0**

Job No. : N4220
Client : GTA
Suburb : West Pennant Hills
Location : 4. Highs Rd / Castle Hill Rd / Country Dr

Day/Date : Tue, 5th June 2018
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

MATRIX Traffic and Transport Data



Approach	Highs Rd												Castle Hill Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	228	8	**236**	52	4	**56**	7	1	**8**	0	0	**0**	5	5	**10**	618	46	**664**	64	16	**80**	0	0	**0**
7:15 to 8:15	280	10	**290**	61	4	**65**	9	1	**10**	0	0	**0**	4	4	**8**	663	53	**716**	77	15	**92**	0	0	**0**
7:30 to 8:30	332	11	**343**	85	2	**87**	8	0	**8**	0	0	**0**	3	4	**7**	740	55	**795**	82	22	**104**	0	0	**0**
7:45 to 8:45	356	10	**366**	104	2	**106**	8	0	**8**	0	0	**0**	1	5	**6**	770	51	**821**	81	15	**96**	0	0	**0**
8:00 to 9:00	355	11	**366**	109	1	**110**	6	0	**6**	0	0	**0**	4	2	**6**	775	51	**826**	78	13	**91**	0	0	**0**
AM Totals	**583**	**19**	**602**	**161**	**5**	**166**	**13**	**1**	**14**	**0**	**0**	**0**	**9**	**7**	**16**	**1,393**	**97**	**1,490**	**142**	**29**	**171**	**0**	**0**	**0**
16:00 to 17:00	339	11	**350**	129	5	**134**	6	0	**6**	0	0	**0**	8	0	**8**	1,264	36	**1,300**	82	8	**90**	0	0	**0**
16:15 to 17:15	347	10	**357**	152	5	**157**	7	0	**7**	0	0	**0**	9	0	**9**	1,305	27	**1,332**	86	7	**93**	0	0	**0**
16:30 to 17:30	365	11	**376**	145	1	**146**	6	0	**6**	0	0	**0**	9	0	**9**	1,278	21	**1,299**	96	5	**101**	0	0	**0**
16:45 to 17:45	359	11	**370**	140	1	**141**	2	0	**2**	0	0	**0**	8	0	**8**	1,272	17	**1,289**	95	3	**98**	0	0	**0**
17:00 to 18:00	386	9	**395**	143	2	**145**	4	0	**4**	0	0	**0**	13	0	**13**	1,252	8	**1,260**	93	3	**96**	0	0	**0**
PM Totals	**725**	**20**	**745**	**272**	**7**	**279**	**10**	**0**	**10**	**0**	**0**	**0**	**21**	**0**	**21**	**2,516**	**44**	**2,560**	**175**	**11**	**186**	**0**	**0**	**0**

Approach	Country Dr												Castle Hill Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	63	4	**67**	201	10	**211**	559	16	**575**	0	0	**0**	521	26	**547**	958	39	**997**	197	24	**221**	0	0	**0**
7:15 to 8:15	64	5	**69**	161	10	**171**	658	15	**673**	0	0	**0**	585	23	**608**	918	34	**952**	170	21	**191**	0	0	**0**
7:30 to 8:30	68	6	**74**	139	4	**143**	704	19	**723**	0	0	**0**	599	18	**617**	819	30	**849**	161	17	**178**	0	0	**0**
7:45 to 8:45	79	7	**86**	152	5	**157**	813	22	**835**	0	0	**0**	611	15	**626**	741	30	**771**	170	8	**178**	0	0	**0**
8:00 to 9:00	85	7	**92**	150	3	**153**	792	24	**816**	0	0	**0**	553	14	**567**	779	30	**809**	178	11	**189**	0	0	**0**
AM Totals	**148**	**11**	**159**	**351**	**13**	**364**	**1,351**	**40**	**1,391**	**0**	**0**	**0**	**1,074**	**40**	**1,114**	**1,737**	**69**	**1,806**	**375**	**35**	**410**	**0**	**0**	**0**
16:00 to 17:00	50	4	**54**	104	2	**106**	575	10	**585**	0	0	**0**	593	12	**605**	727	36	**763**	249	4	**253**	0	0	**0**
16:15 to 17:15	48	3	**51**	107	2	**109**	541	10	**551**	0	0	**0**	624	10	**634**	723	24	**747**	227	3	**230**	0	0	**0**
16:30 to 17:30	45	4	**49**	99	0	**99**	505	7	**512**	0	0	**0**	631	9	**640**	711	21	**732**	265	4	**269**	0	0	**0**
16:45 to 17:45	46	3	**49**	112	0	**112**	544	9	**553**	0	0	**0**	615	10	**625**	685	14	**699**	262	4	**266**	0	0	**0**
17:00 to 18:00	36	2	**38**	119	0	**119**	544	8	**552**	0	0	**0**	628	11	**639**	668	11	**679**	261	4	**265**	0	0	**0**
PM Totals	**86**	**6**	**92**	**223**	**2**	**225**	**1,119**	**18**	**1,137**	**0**	**0**	**0**	**1,221**	**23**	**1,244**	**1,395**	**47**	**1,442**	**510**	**8**	**518**	**0**	**0**	**0**

Appendix B

SIDRA INTERSECTION Results

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - AM - Scenario 1]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	378	1.9	0.315	3.7	LOS A	2.7	19.0	0.23	0.53	45.0
3	R2	327	1.9	0.315	7.1	LOS A	2.7	19.0	0.23	0.53	45.8
Approach		705	1.9	0.315	5.3	LOS A	2.7	19.0	0.23	0.53	45.4
East: Aiken Road - E											
4	L2	113	4.7	0.325	7.3	LOS A	1.7	12.3	0.73	0.77	44.1
5	T1	68	6.2	0.325	7.3	LOS A	1.7	12.3	0.73	0.77	45.7
Approach		181	5.2	0.325	7.3	LOS A	1.7	12.3	0.73	0.77	44.8
West: Aiken Road - W											
11	T1	121	12.2	1.043	79.2	LOS F	46.4	332.7	1.00	2.69	23.3
12	R2	576	0.9	1.043	86.5	LOS F	46.4	332.7	1.00	2.69	21.2
Approach		697	2.9	1.043	85.2	LOS F	46.4	332.7	1.00	2.69	21.6
All Vehicles		1583	2.7	1.043	40.7	LOS C	46.4	332.7	0.63	1.51	30.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - AM - Scenario 2_mitigation]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	414	1.8	0.330	3.7	LOS A	2.8	20.2	0.23	0.53	45.1
3	R2	327	1.9	0.330	7.1	LOS A	2.8	20.2	0.23	0.53	45.8
Approach		741	1.8	0.330	5.2	LOS A	2.8	20.2	0.23	0.53	45.4
East: Aiken Road - E											
4	L2	113	4.7	0.351	7.8	LOS A	1.5	11.2	0.71	0.83	43.8
5	T1	68	6.2	0.351	7.9	LOS A	1.5	11.2	0.71	0.83	45.4
Approach		181	5.2	0.351	7.9	LOS A	1.5	11.2	0.71	0.83	44.4
West: Aiken Road - W											
11	T1	121	12.2	0.373	5.7	LOS A	1.6	12.0	0.57	0.73	45.2
12	R2	721	0.7	0.851	17.3	LOS B	8.9	62.7	0.76	1.14	39.5
Approach		842	2.4	0.851	15.7	LOS B	8.9	62.7	0.74	1.08	40.3
All Vehicles		1764	2.4	0.851	10.5	LOS A	8.9	62.7	0.52	0.82	42.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - AM - Scenario 2]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	414	1.8	0.331	3.7	LOS A	2.9	20.4	0.24	0.53	45.1
3	R2	327	1.9	0.331	7.1	LOS A	2.9	20.4	0.24	0.53	45.8
Approach		741	1.8	0.331	5.2	LOS A	2.9	20.4	0.24	0.53	45.4
East: Aiken Road - E											
4	L2	113	4.7	0.329	7.3	LOS A	1.7	12.4	0.73	0.77	44.1
5	T1	68	6.2	0.329	7.4	LOS A	1.7	12.4	0.73	0.77	45.7
Approach		181	5.2	0.329	7.4	LOS A	1.7	12.4	0.73	0.77	44.7
West: Aiken Road - W											
11	T1	121	12.2	1.287	276.9	LOS F	137.0	978.8	1.00	6.06	10.4
12	R2	721	0.7	1.287	283.6	LOS F	137.0	978.8	1.00	6.06	9.0
Approach		842	2.4	1.287	282.7	LOS F	137.0	978.8	1.00	6.06	9.2
All Vehicles		1764	2.4	1.287	137.9	LOS F	137.0	978.8	0.65	3.19	15.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - AM - Scenario 3]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	396	1.9	0.323	3.7	LOS A	2.8	19.7	0.23	0.53	45.1
3	R2	327	1.9	0.323	7.1	LOS A	2.8	19.7	0.23	0.53	45.8
Approach		723	1.9	0.323	5.3	LOS A	2.8	19.7	0.23	0.53	45.4
East: Aiken Road - E											
4	L2	113	4.7	0.328	7.3	LOS A	1.7	12.4	0.73	0.77	44.1
5	T1	68	6.2	0.328	7.4	LOS A	1.7	12.4	0.73	0.77	45.7
Approach		181	5.2	0.328	7.3	LOS A	1.7	12.4	0.73	0.77	44.8
West: Aiken Road - W											
11	T1	121	12.2	1.166	172.8	LOS F	89.8	642.7	1.00	4.45	14.6
12	R2	649	0.8	1.166	179.8	LOS F	89.8	642.7	1.00	4.45	12.9
Approach		771	2.6	1.166	178.7	LOS F	89.8	642.7	1.00	4.45	13.2
All Vehicles		1675	2.6	1.166	85.3	LOS F	89.8	642.7	0.64	2.36	21.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - AM]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	365	2.0	0.309	3.7	LOS A	2.6	18.3	0.23	0.53	45.0
3	R2	327	1.9	0.309	7.1	LOS A	2.6	18.3	0.23	0.53	45.8
Approach		693	2.0	0.309	5.3	LOS A	2.6	18.3	0.23	0.53	45.4
East: Aiken Road - E											
4	L2	113	4.7	0.309	7.0	LOS A	1.6	11.4	0.70	0.75	44.2
5	T1	68	6.2	0.309	7.1	LOS A	1.6	11.4	0.70	0.75	45.9
Approach		181	5.2	0.309	7.0	LOS A	1.6	11.4	0.70	0.75	44.9
West: Aiken Road - W											
11	T1	121	12.2	0.962	37.9	LOS C	23.7	170.2	0.94	1.77	31.8
12	R2	527	1.0	0.962	44.1	LOS D	23.7	170.2	0.94	1.77	29.7
Approach		648	3.1	0.962	42.9	LOS D	23.7	170.2	0.94	1.77	30.2
All Vehicles		1522	2.8	0.962	21.5	LOS B	23.7	170.2	0.59	1.09	37.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - PM - Scenario 1]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	701	0.5	0.728	4.7	LOS A	8.1	57.0	0.68	0.62	44.2
3	R2	429	0.5	0.728	8.5	LOS A	8.1	57.0	0.68	0.62	44.9
Approach		1131	0.5	0.728	6.2	LOS A	8.1	57.0	0.68	0.62	44.5
East: Aiken Road - E											
4	L2	243	0.0	0.535	7.4	LOS A	4.3	30.5	0.74	0.78	44.1
5	T1	220	1.9	0.535	7.5	LOS A	4.3	30.5	0.74	0.78	45.7
Approach		463	0.9	0.535	7.5	LOS A	4.3	30.5	0.74	0.78	44.9
West: Aiken Road - W											
11	T1	25	4.2	0.487	7.0	LOS A	3.7	26.4	0.75	0.81	44.3
12	R2	408	0.8	0.487	10.3	LOS A	3.7	26.4	0.75	0.81	43.2
Approach		434	1.0	0.487	10.1	LOS A	3.7	26.4	0.75	0.81	43.3
All Vehicles		2027	0.7	0.728	7.3	LOS A	8.1	57.0	0.71	0.70	44.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - PM - Scenario 2]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	851	0.4	0.819	5.7	LOS A	12.8	89.8	0.79	0.66	44.1
3	R2	429	0.5	0.819	9.5	LOS A	12.8	89.8	0.79	0.66	44.8
Approach		1280	0.4	0.819	7.0	LOS A	12.8	89.8	0.79	0.66	44.3
East: Aiken Road - E											
4	L2	243	0.0	0.558	8.2	LOS A	4.8	33.6	0.78	0.84	43.6
5	T1	220	1.9	0.558	8.3	LOS A	4.8	33.6	0.78	0.84	45.2
Approach		463	0.9	0.558	8.2	LOS A	4.8	33.6	0.78	0.84	44.4
West: Aiken Road - W											
11	T1	25	4.2	0.536	7.6	LOS A	4.6	32.4	0.79	0.85	44.0
12	R2	446	0.7	0.536	10.8	LOS A	4.6	32.4	0.79	0.85	42.9
Approach		472	0.9	0.536	10.7	LOS A	4.6	32.4	0.79	0.85	43.0
All Vehicles		2215	0.6	0.819	8.0	LOS A	12.8	89.8	0.79	0.74	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - PM - Scenario 3]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	776	0.4	0.774	5.2	LOS A	10.1	71.1	0.73	0.64	44.1
3	R2	429	0.5	0.774	8.9	LOS A	10.1	71.1	0.73	0.64	44.9
Approach		1205	0.4	0.774	6.5	LOS A	10.1	71.1	0.73	0.64	44.4
East: Aiken Road - E											
4	L2	243	0.0	0.547	7.8	LOS A	4.5	32.0	0.76	0.81	43.8
5	T1	220	1.9	0.547	7.9	LOS A	4.5	32.0	0.76	0.81	45.5
Approach		463	0.9	0.547	7.8	LOS A	4.5	32.0	0.76	0.81	44.7
West: Aiken Road - W											
11	T1	25	4.2	0.512	7.3	LOS A	4.1	29.3	0.77	0.83	44.1
12	R2	427	0.7	0.512	10.5	LOS A	4.1	29.3	0.77	0.83	43.1
Approach		453	0.9	0.512	10.4	LOS A	4.1	29.3	0.77	0.83	43.1
All Vehicles		2121	0.6	0.774	7.6	LOS A	10.1	71.1	0.75	0.72	44.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [4. Aiken Road/ Oakes Road - PM]

Aiken Road/ Oakes Road existing intersection
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Oakes Road - S											
1	L2	652	0.5	0.698	4.7	LOS A	7.4	52.0	0.65	0.62	44.2
3	R2	429	0.5	0.698	8.4	LOS A	7.4	52.0	0.65	0.62	45.0
Approach		1081	0.5	0.698	6.1	LOS A	7.4	52.0	0.65	0.62	44.5
East: Aiken Road - E											
4	L2	243	0.0	0.527	7.2	LOS A	4.2	29.5	0.73	0.77	44.2
5	T1	220	1.9	0.527	7.3	LOS A	4.2	29.5	0.73	0.77	45.8
Approach		463	0.9	0.527	7.2	LOS A	4.2	29.5	0.73	0.77	45.0
West: Aiken Road - W											
11	T1	25	4.2	0.472	6.9	LOS A	3.5	24.7	0.74	0.80	44.4
12	R2	396	0.8	0.472	10.1	LOS A	3.5	24.7	0.74	0.80	43.3
Approach		421	1.0	0.472	9.9	LOS A	3.5	24.7	0.74	0.80	43.4
All Vehicles		1965	0.7	0.698	7.2	LOS A	7.4	52.0	0.69	0.69	44.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM - Scenario 1]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 85 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	43	12.2	0.804	47.2	LOS D	10.4	74.8	1.00	0.96	31.7
11	T1	64	3.3	0.804	42.6	LOS D	10.4	74.8	1.00	0.96	30.7
12	R2	367	1.1	0.804	47.0	LOS D	10.9	77.0	1.00	0.95	31.7
Approach		475	2.4	0.804	46.4	LOS D	10.9	77.0	1.00	0.95	31.6
East: Castle Hill Road - E											
1	L2	294	2.2	0.938	56.3	LOS D	32.1	234.3	1.00	1.20	30.1
2	T1	803	7.7	0.938	51.8	LOS D	32.1	234.3	0.98	1.19	32.1
3	R2	80	9.2	0.340	25.3	LOS B	2.0	15.1	0.92	0.75	39.3
Approach		1177	6.4	0.938	51.2	LOS D	32.1	234.3	0.98	1.16	32.0
North: Edward Bennett Drive - N											
4	L2	119	8.0	0.303	21.0	LOS B	2.6	19.4	0.87	0.76	40.5
5	T1	47	0.0	0.306	35.6	LOS C	3.4	23.8	0.93	0.74	33.0
6	R2	41	2.6	0.306	40.2	LOS C	3.4	23.8	0.93	0.74	34.3
Approach		207	5.1	0.306	28.1	LOS B	3.4	23.8	0.90	0.75	37.3
West: Castle Hill Road - W											
7	L2	29	7.1	0.804	37.7	LOS C	20.8	150.7	0.98	0.94	36.4
8	T1	912	3.8	0.804	31.8	LOS C	20.8	150.7	0.95	0.92	39.3
9	R2	124	0.8	0.559	27.7	LOS B	3.2	22.5	0.99	0.77	38.3
Approach		1065	3.6	0.804	31.5	LOS C	20.8	150.7	0.96	0.91	39.1
All Vehicles		2924	4.6	0.938	41.6	LOS C	32.1	234.3	0.97	1.00	34.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	24.1	LOS C	0.1	0.1	0.75	0.75
P1	East Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
P2	North Full Crossing	53	24.1	LOS C	0.1	0.1	0.75	0.75
All Pedestrians		158	28.4	LOS C			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: C:\Users\mansee.sachdeva\Desktop\180622sid-N148250 55 Coonara Avenue, West Pennant Hills.sip7

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM - Scenario 1]

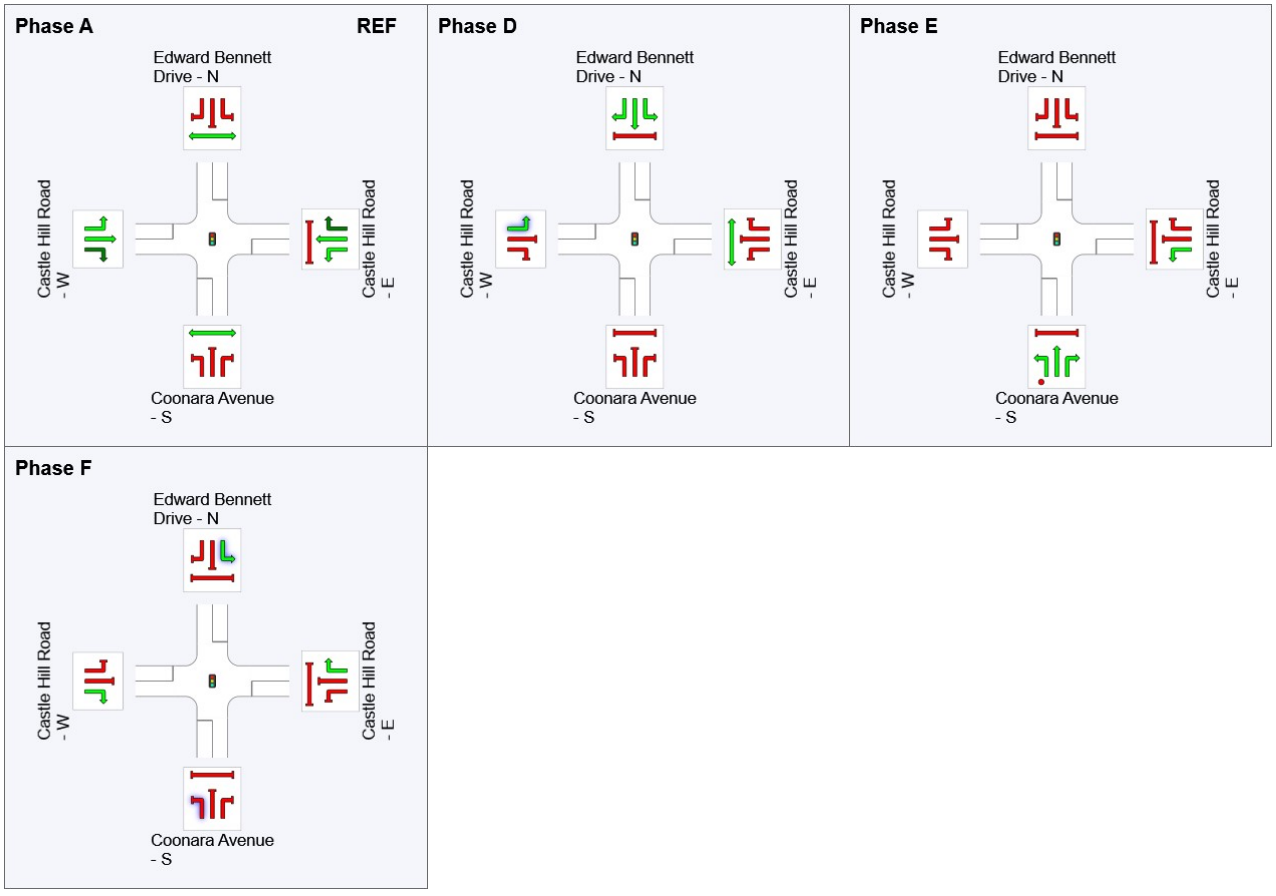
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 85 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	34	53	73
Green Time (sec)	28	13	14	6
Phase Time (sec)	34	19	20	12
Phase Split	40%	22%	24%	14%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM - Scenario 2]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	43	12.2	0.851	46.1	LOS D	5.9	43.2	1.00	1.02	32.2
11	T1	64	3.3	0.851	41.6	LOS C	5.9	43.2	1.00	1.02	31.2
12	R2	196	2.2	0.851	45.9	LOS D	6.2	44.0	1.00	1.02	32.0
Approach		303	3.8	0.851	45.0	LOS D	6.2	44.0	1.00	1.02	31.8
East: Castle Hill Road - E											
1	L2	252	2.5	0.924	48.0	LOS D	24.8	181.4	1.00	1.22	32.4
2	T1	803	7.7	0.924	42.8	LOS D	24.8	181.4	0.99	1.20	34.9
3	R2	80	9.2	0.301	21.8	LOS B	1.6	12.1	0.92	0.75	40.8
Approach		1135	6.7	0.924	42.5	LOS D	24.8	181.4	0.99	1.17	34.6
North: Edward Bennett Drive - N											
4	L2	119	8.0	0.279	17.9	LOS B	2.2	16.6	0.85	0.75	42.0
5	T1	47	0.0	0.298	29.3	LOS C	2.8	19.7	0.92	0.74	35.0
6	R2	41	2.6	0.298	33.9	LOS C	2.8	19.7	0.92	0.74	36.5
Approach		207	5.1	0.298	23.7	LOS B	2.8	19.7	0.88	0.74	39.0
West: Castle Hill Road - W											
7	L2	29	7.1	0.837	35.8	LOS C	18.6	134.9	0.99	1.01	37.1
8	T1	912	3.8	0.837	30.2	LOS C	18.6	134.9	0.97	0.99	40.0
9	R2	124	0.8	0.462	22.8	LOS B	2.6	18.0	0.97	0.77	40.4
Approach		1065	3.6	0.837	29.5	LOS C	18.6	134.9	0.97	0.97	40.0
All Vehicles		2711	5.0	0.924	36.2	LOS C	24.8	181.4	0.98	1.04	36.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	21.7	LOS C	0.1	0.1	0.79	0.79
P1	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P2	North Full Crossing	53	21.7	LOS C	0.1	0.1	0.79	0.79
All Pedestrians		158	24.2	LOS C			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM - Scenario 2]

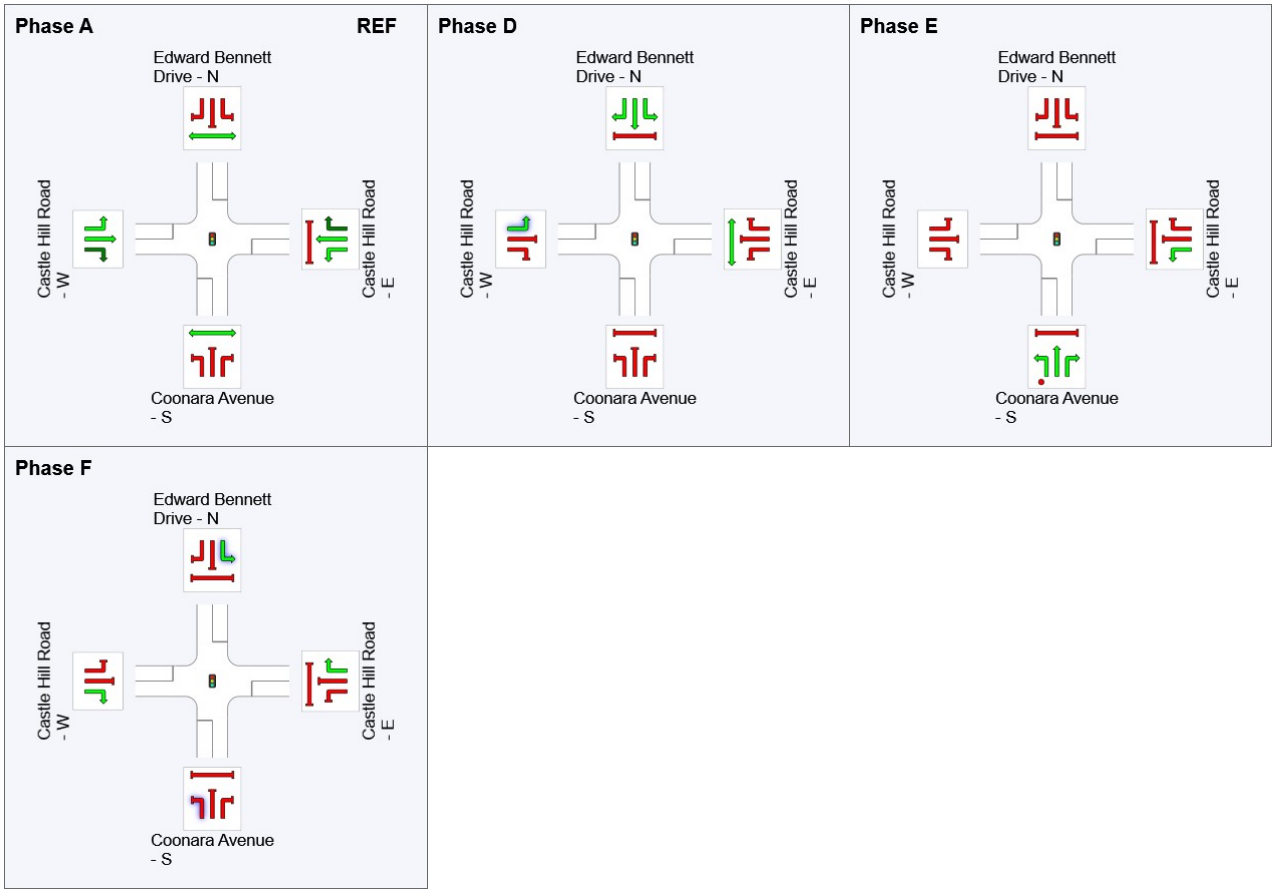
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	28	45	58
Green Time (sec)	22	11	7	6
Phase Time (sec)	28	17	13	12
Phase Split	40%	24%	19%	17%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM - Scenario 3]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 78 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	43	12.2	0.772	44.2	LOS D	7.8	56.4	1.00	0.94	32.6
11	T1	64	3.3	0.772	39.6	LOS C	7.8	56.4	1.00	0.94	31.6
12	R2	282	1.5	0.772	44.0	LOS D	8.2	57.8	1.00	0.92	32.5
Approach		389	3.0	0.772	43.3	LOS D	8.2	57.8	1.00	0.93	32.4
East: Castle Hill Road - E											
1	L2	273	2.3	0.932	52.6	LOS D	28.5	208.4	1.00	1.21	31.1
2	T1	803	7.7	0.932	47.8	LOS D	28.5	208.4	0.99	1.20	33.3
3	R2	80	9.2	0.327	24.0	LOS B	1.8	13.8	0.93	0.75	39.8
Approach		1156	6.6	0.932	47.3	LOS D	28.5	208.4	0.99	1.17	33.1
North: Edward Bennett Drive - N											
4	L2	119	8.0	0.293	19.5	LOS B	2.4	18.0	0.86	0.75	41.2
5	T1	47	0.0	0.304	32.7	LOS C	3.1	21.9	0.93	0.74	33.9
6	R2	41	2.6	0.304	37.3	LOS C	3.1	21.9	0.93	0.74	35.3
Approach		207	5.1	0.304	26.1	LOS B	3.1	21.9	0.89	0.75	38.1
West: Castle Hill Road - W											
7	L2	29	7.1	0.824	37.0	LOS C	20.0	144.8	0.98	0.98	36.7
8	T1	912	3.8	0.824	31.4	LOS C	20.0	144.8	0.96	0.96	39.5
9	R2	124	0.8	0.514	25.5	LOS B	2.9	20.5	0.98	0.77	39.3
Approach		1065	3.6	0.824	30.9	LOS C	20.0	144.8	0.97	0.94	39.4
All Vehicles		2818	4.8	0.932	39.0	LOS C	28.5	208.4	0.97	1.02	35.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	23.1	LOS C	0.1	0.1	0.77	0.77
P1	East Full Crossing	53	33.3	LOS D	0.1	0.1	0.93	0.93
P2	North Full Crossing	53	23.1	LOS C	0.1	0.1	0.77	0.77
All Pedestrians		158	26.5	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM - Scenario 3]

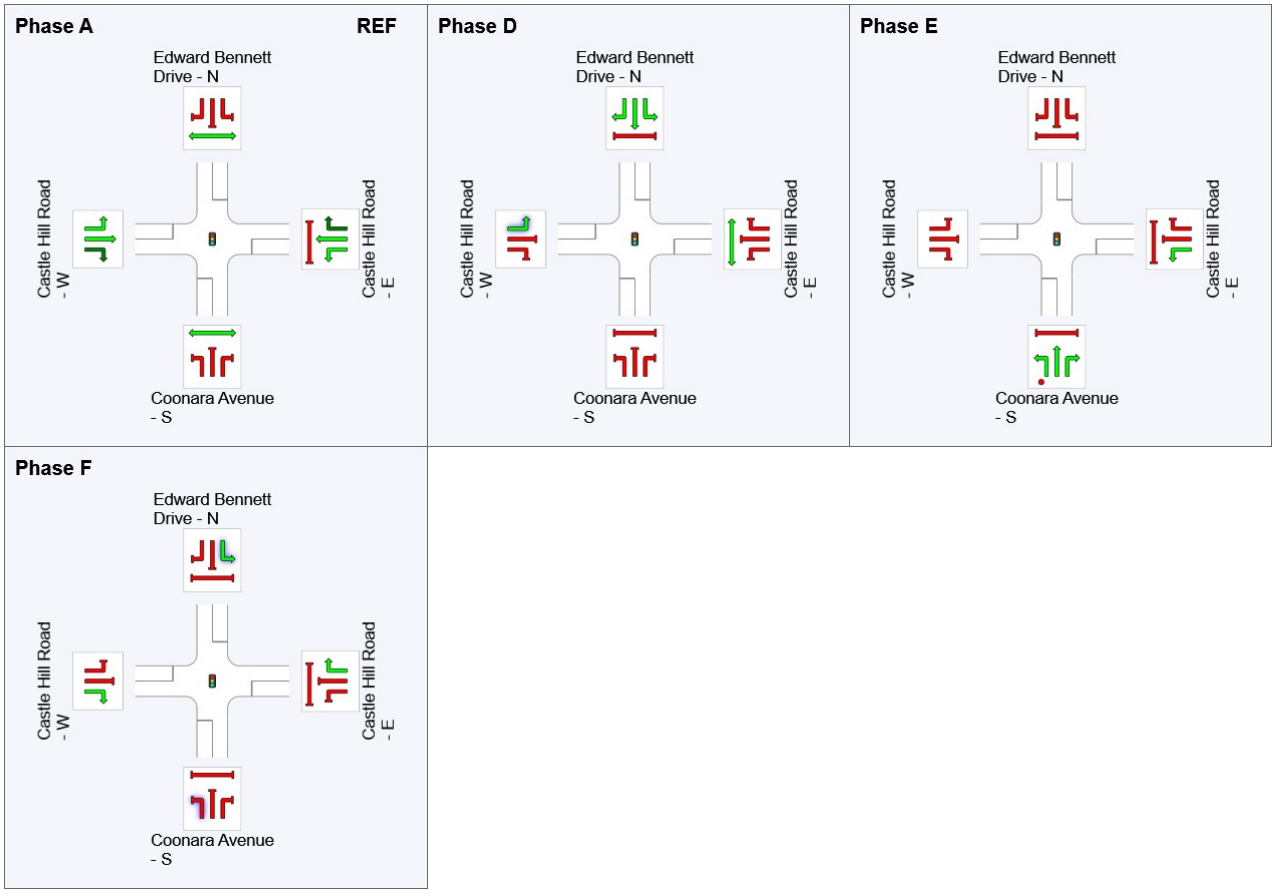
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 78 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	31	49	66
Green Time (sec)	25	12	11	6
Phase Time (sec)	31	18	17	12
Phase Split	40%	23%	22%	15%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	43	12.2	0.694	41.3	LOS C	4.4	32.6	1.00	0.87	33.8
11	T1	64	3.3	0.694	36.7	LOS C	4.4	32.6	1.00	0.87	32.7
12	R2	139	3.0	0.694	41.2	LOS C	4.6	33.1	1.00	0.87	33.3
Approach		246	4.7	0.694	40.0	LOS C	4.6	33.1	1.00	0.87	33.2
East: Castle Hill Road - E											
1	L2	237	2.7	0.906	44.5	LOS D	23.0	168.4	1.00	1.18	33.5
2	T1	803	7.7	0.906	39.1	LOS C	23.0	168.4	0.99	1.15	36.2
3	R2	80	9.2	0.303	22.1	LOS B	1.6	12.1	0.93	0.75	40.7
Approach		1120	6.8	0.906	39.1	LOS C	23.0	168.4	0.99	1.13	35.8
North: Edward Bennett Drive - N											
4	L2	119	8.0	0.279	17.9	LOS B	2.2	16.6	0.85	0.75	42.0
5	T1	47	0.0	0.298	29.3	LOS C	2.8	19.7	0.92	0.74	35.0
6	R2	41	2.6	0.298	33.9	LOS C	2.8	19.7	0.92	0.74	36.5
Approach		207	5.1	0.298	23.7	LOS B	2.8	19.7	0.88	0.74	39.0
West: Castle Hill Road - W											
7	L2	29	7.1	0.837	35.8	LOS C	18.6	134.9	0.99	1.01	37.1
8	T1	912	3.8	0.837	30.2	LOS C	18.6	134.9	0.97	0.99	40.0
9	R2	124	0.8	0.459	22.8	LOS B	2.6	18.0	0.97	0.77	40.4
Approach		1065	3.6	0.837	29.5	LOS C	18.6	134.9	0.97	0.97	40.0
All Vehicles		2639	5.1	0.906	34.1	LOS C	23.0	168.4	0.98	1.01	37.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	21.7	LOS C	0.1	0.1	0.79	0.79
P1	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P2	North Full Crossing	53	21.7	LOS C	0.1	0.1	0.79	0.79
All Pedestrians		158	24.2	LOS C			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - AM]

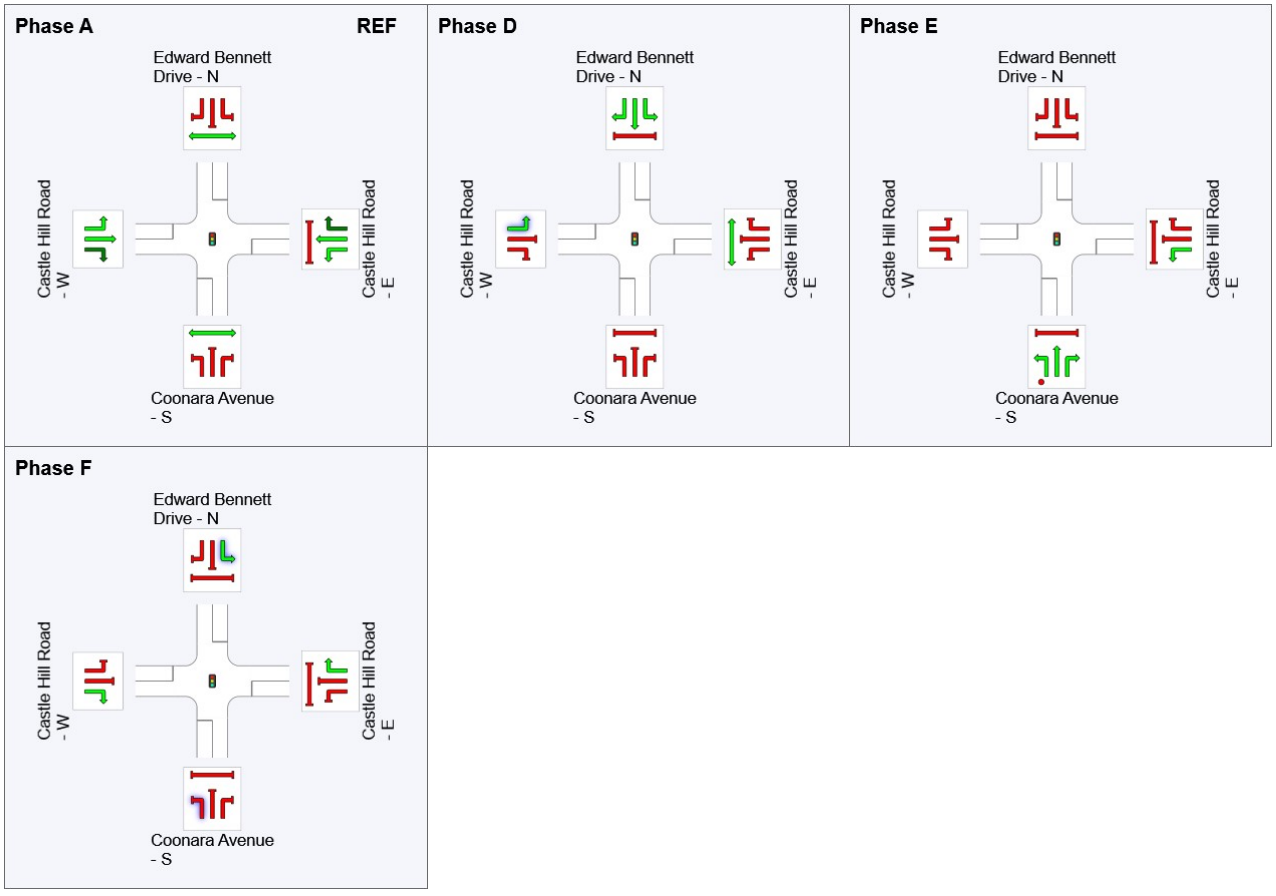
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	28	45	58
Green Time (sec)	22	11	7	6
Phase Time (sec)	28	17	13	12
Phase Split	40%	24%	19%	17%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM - Scenario 1]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	113	0.0	0.887	71.4	LOS F	15.0	105.1	1.00	1.03	26.4
11	T1	74	0.0	0.887	66.9	LOS E	15.0	105.1	1.00	1.03	25.6
12	R2	268	2.0	0.887	71.2	LOS F	15.3	108.9	1.00	1.00	26.2
Approach		455	1.2	0.887	70.6	LOS F	15.3	108.9	1.00	1.01	26.1
East: Castle Hill Rd - E											
1	L2	425	1.2	0.920	43.8	LOS D	61.6	436.8	0.95	0.98	33.7
2	T1	1271	1.8	0.920	39.7	LOS C	61.6	436.8	0.82	0.90	35.9
3	R2	188	4.5	0.428	44.1	LOS D	9.3	67.3	0.89	0.88	32.7
Approach		1884	2.0	0.920	41.1	LOS C	61.6	436.8	0.86	0.92	35.1
North: Edward Bennett Drive - N											
4	L2	44	9.5	0.191	55.5	LOS D	2.4	17.8	0.93	0.74	29.3
5	T1	27	0.0	0.283	51.5	LOS D	3.8	26.9	0.94	0.75	28.7
6	R2	43	2.4	0.283	56.1	LOS D	3.8	26.9	0.94	0.75	29.7
Approach		115	4.6	0.283	54.8	LOS D	3.8	26.9	0.94	0.74	29.3
West: Castle Hill Road - W											
7	L2	58	9.1	0.748	47.1	LOS D	25.0	181.0	0.95	0.87	33.2
8	T1	791	3.5	0.748	39.0	LOS C	25.0	181.0	0.91	0.83	36.4
9	R2	56	1.9	0.767	73.3	LOS F	3.7	26.6	1.00	0.91	25.9
Approach		904	3.7	0.767	41.6	LOS C	25.0	181.0	0.92	0.84	35.3
All Vehicles		3358	2.4	0.920	45.7	LOS D	61.6	436.8	0.90	0.90	33.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	30.9	LOS D	0.1	0.1	0.72	0.72
P1	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	North Full Crossing	53	30.9	LOS D	0.1	0.1	0.72	0.72
All Pedestrians		158	38.7	LOS D			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM - Scenario 1]

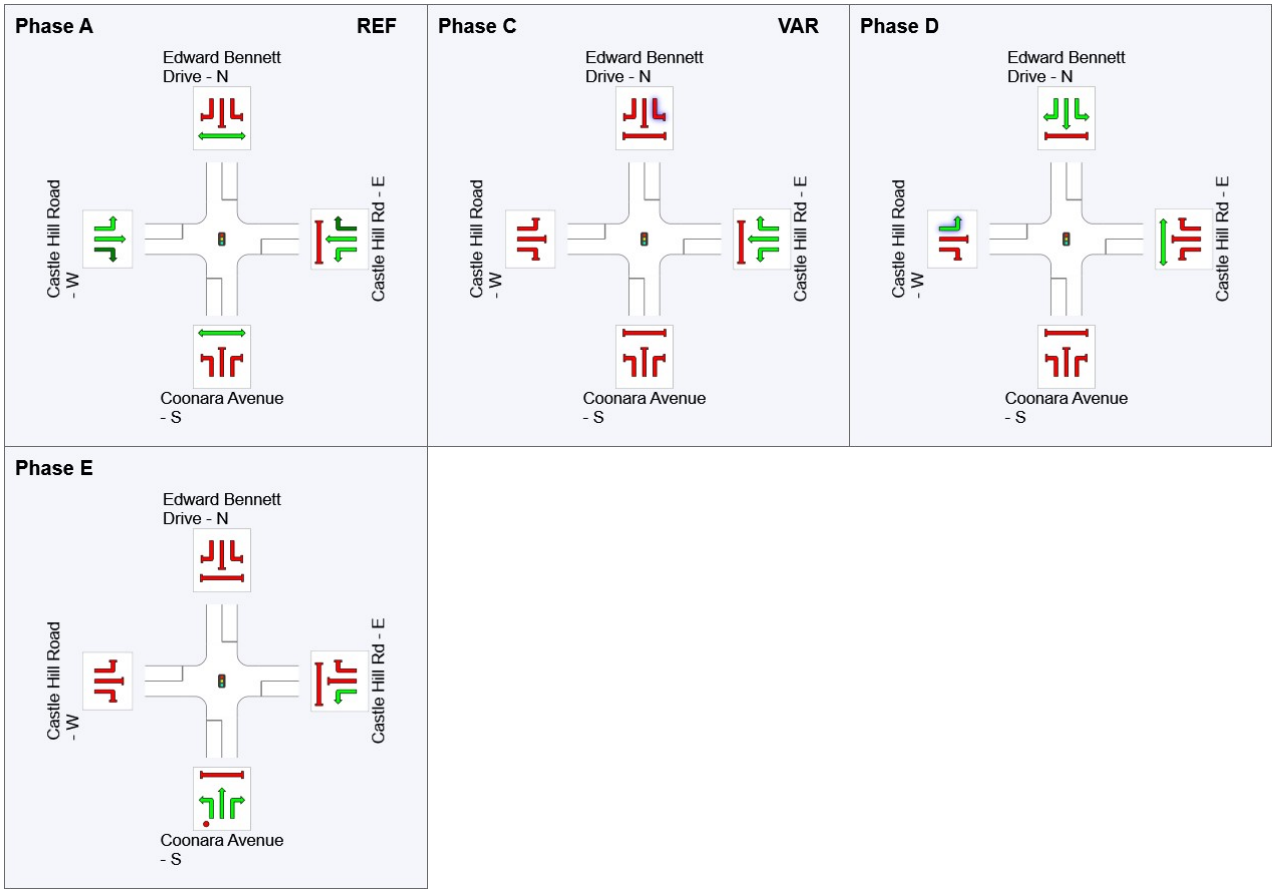
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F*, F1*, F2*
Output Phase Sequence: A, C*, D, E
(* Variable Phase)

Phase Timing Results

Phase	A	C	D	E
Phase Change Time (sec)	0	47	75	97
Green Time (sec)	41	22	16	17
Phase Time (sec)	47	28	22	23
Phase Split	39%	23%	18%	19%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM - Scenario 2]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 107 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	113	0.0	0.936	74.8	LOS F	13.2	92.8	1.00	1.15	25.8
11	T1	74	0.0	0.936	70.3	LOS E	13.2	92.8	1.00	1.15	25.0
12	R2	225	2.3	0.936	74.6	LOS F	13.5	96.1	1.00	1.09	25.5
Approach		412	1.3	0.936	73.9	LOS F	13.5	96.1	1.00	1.11	25.5
East: Castle Hill Rd - E											
1	L2	252	2.1	0.870	32.1	LOS C	45.5	323.3	0.90	0.90	38.2
2	T1	1271	1.8	0.870	27.5	LOS B	45.5	323.3	0.79	0.82	40.9
3	R2	188	4.5	0.531	36.1	LOS C	8.5	62.0	0.92	0.83	35.2
Approach		1711	2.2	0.870	29.1	LOS C	45.5	323.3	0.82	0.84	39.8
North: Edward Bennett Drive - N											
4	L2	44	9.5	0.181	49.4	LOS D	2.1	15.8	0.92	0.73	30.8
5	T1	27	0.0	0.269	45.3	LOS D	3.4	23.9	0.93	0.74	30.2
6	R2	43	2.4	0.269	49.9	LOS D	3.4	23.9	0.93	0.74	31.3
Approach		115	4.6	0.269	48.6	LOS D	3.4	23.9	0.93	0.74	30.8
West: Castle Hill Road - W											
7	L2	58	9.1	0.577	34.0	LOS C	17.5	127.1	0.83	0.77	37.7
8	T1	791	3.5	0.577	27.2	LOS B	17.5	127.1	0.82	0.74	41.3
9	R2	56	1.9	0.759	67.9	LOS E	3.2	23.0	1.00	0.82	27.0
Approach		904	3.7	0.759	30.2	LOS C	17.5	127.1	0.83	0.74	39.7
All Vehicles		3141	2.6	0.936	36.0	LOS C	45.5	323.3	0.85	0.84	36.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	23.6	LOS C	0.1	0.1	0.67	0.67
P1	East Full Crossing	53	47.8	LOS E	0.2	0.2	0.95	0.95
P2	North Full Crossing	53	23.6	LOS C	0.1	0.1	0.67	0.67
All Pedestrians		158	31.7	LOS D			0.76	0.76

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM - Scenario 2]

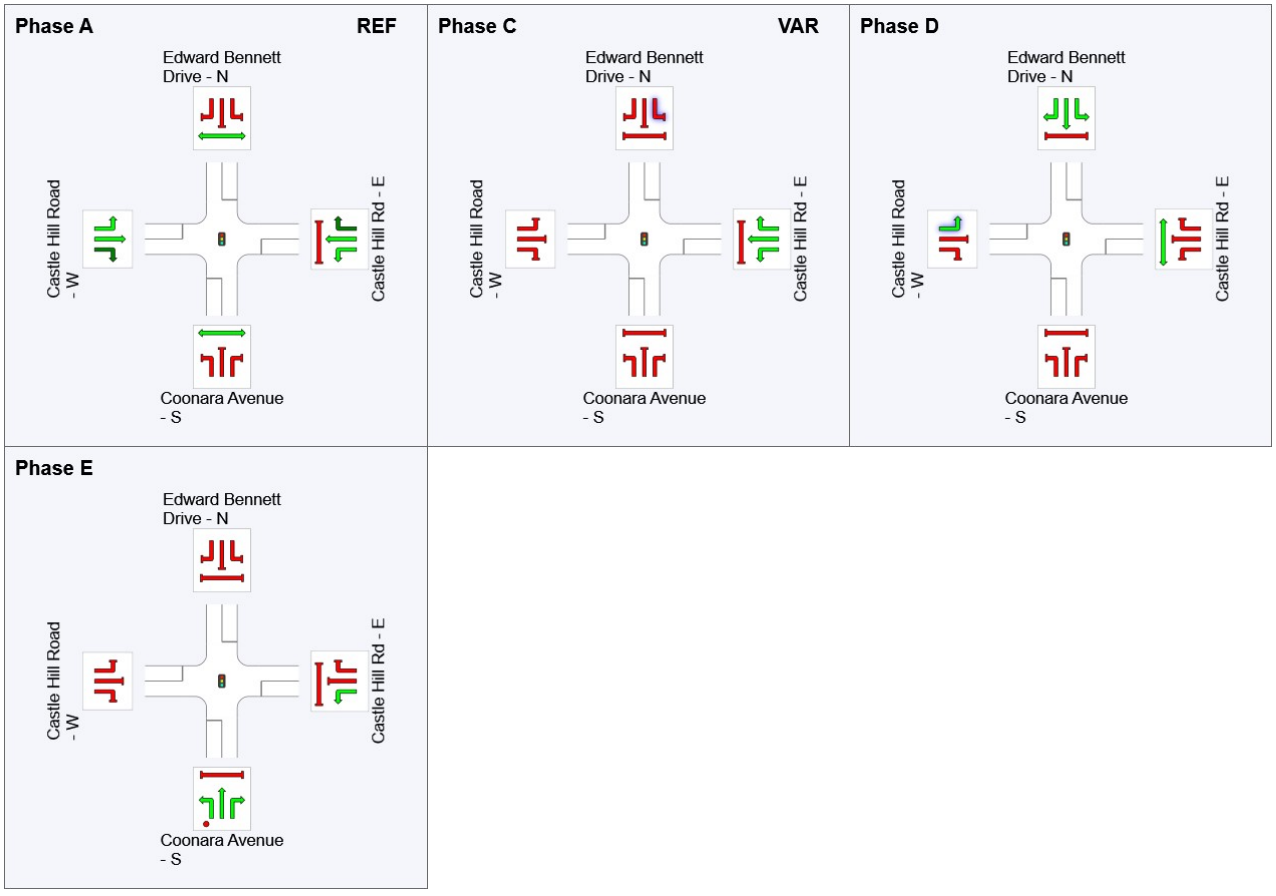
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 107 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F*, F1*, F2*
Output Phase Sequence: A, C*, D, E
(* Variable Phase)

Phase Timing Results

Phase	A	C	D	E
Phase Change Time (sec)	0	49	67	88
Green Time (sec)	43	12	15	13
Phase Time (sec)	49	18	21	19
Phase Split	46%	17%	20%	18%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM - Scenario 3]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 118 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	113	0.0	0.884	70.5	LOS E	14.0	98.5	1.00	1.03	26.6
11	T1	74	0.0	0.884	65.9	LOS E	14.0	98.5	1.00	1.03	25.8
12	R2	247	2.1	0.884	70.3	LOS E	14.3	102.0	1.00	0.99	26.3
Approach		434	1.2	0.884	69.6	LOS E	14.3	102.0	1.00	1.01	26.3
East: Castle Hill Rd - E											
1	L2	339	1.6	0.881	34.5	LOS C	51.2	363.9	0.91	0.91	37.1
2	T1	1271	1.8	0.881	29.9	LOS C	51.2	363.9	0.80	0.82	39.8
3	R2	188	4.5	0.448	44.0	LOS D	9.2	67.2	0.91	0.88	32.7
Approach		1798	2.0	0.881	32.3	LOS C	51.2	363.9	0.83	0.85	38.4
North: Edward Bennett Drive - N											
4	L2	44	9.5	0.187	54.4	LOS D	2.3	17.5	0.92	0.73	29.6
5	T1	27	0.0	0.278	50.4	LOS D	3.7	26.4	0.94	0.74	29.0
6	R2	43	2.4	0.278	55.0	LOS D	3.7	26.4	0.94	0.74	30.0
Approach		115	4.6	0.278	53.7	LOS D	3.7	26.4	0.93	0.74	29.6
West: Castle Hill Road - W											
7	L2	58	9.1	0.737	44.5	LOS D	24.7	179.3	0.94	0.86	34.0
8	T1	791	3.5	0.737	36.5	LOS C	24.7	179.3	0.89	0.81	37.3
9	R2	56	1.9	0.696	66.5	LOS E	3.5	25.2	1.00	0.88	27.2
Approach		904	3.7	0.737	38.9	LOS C	24.7	179.3	0.90	0.82	36.3
All Vehicles		3251	2.5	0.884	39.9	LOS C	51.2	363.9	0.88	0.86	35.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	29.3	LOS C	0.1	0.1	0.70	0.70
P1	East Full Crossing	53	53.3	LOS E	0.2	0.2	0.95	0.95
P2	North Full Crossing	53	29.3	LOS C	0.1	0.1	0.70	0.70
All Pedestrians		158	37.3	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM - Scenario 3]

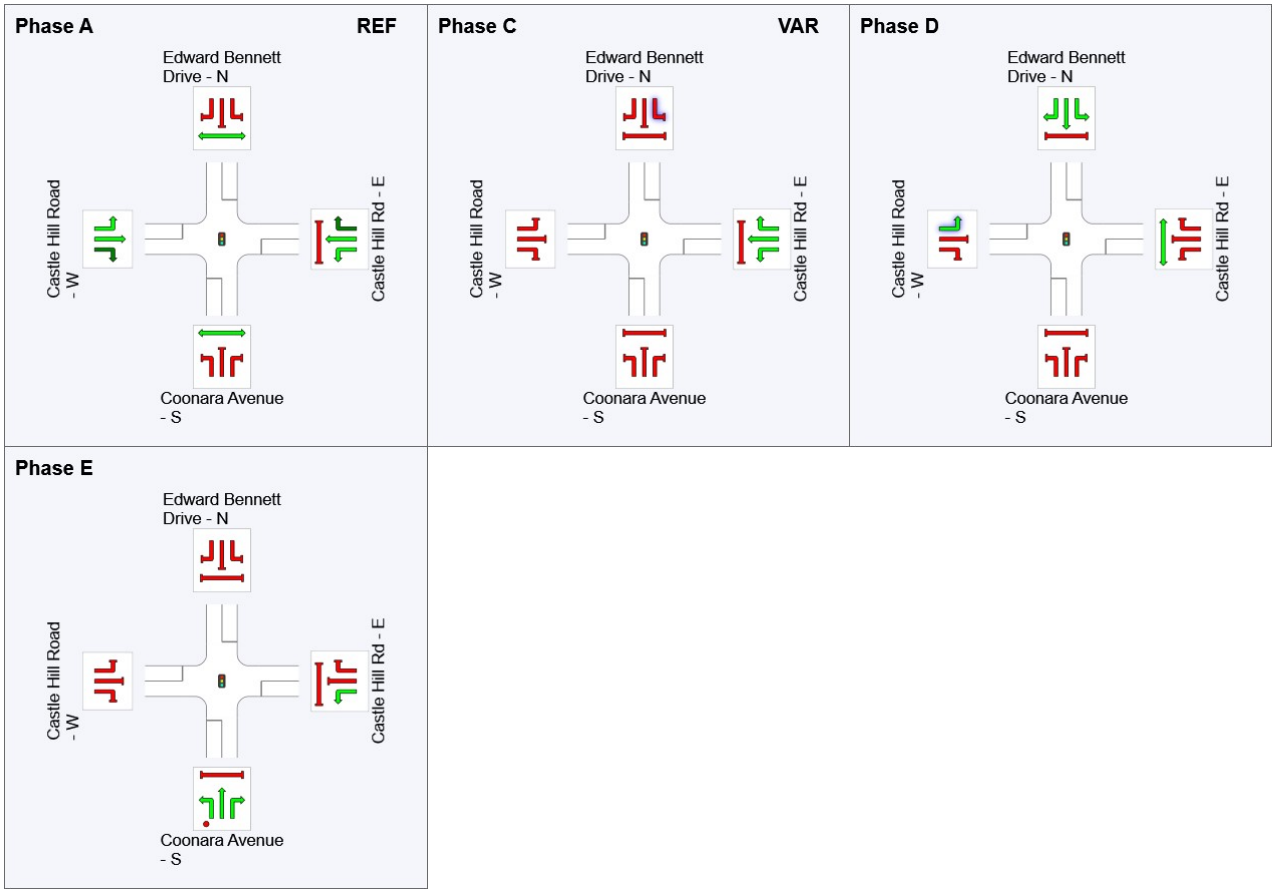
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 118 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F*, F1*, F2*
Output Phase Sequence: A, C*, D, E
(* Variable Phase)

Phase Timing Results

Phase	A	C	D	E
Phase Change Time (sec)	0	48	74	96
Green Time (sec)	42	20	16	16
Phase Time (sec)	48	26	22	22
Phase Split	41%	22%	19%	19%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped

 Phase Transition Applied

MOVEMENT SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM]

Existing intersection
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonara Avenue - S											
10	L2	113	0.0	0.886	65.2	LOS E	11.6	81.5	1.00	1.05	27.7
11	T1	74	0.0	0.886	60.6	LOS E	11.6	81.5	1.00	1.05	26.8
12	R2	211	2.5	0.886	65.1	LOS E	11.8	84.4	1.00	1.01	27.3
Approach		397	1.3	0.886	64.3	LOS E	11.8	84.4	1.00	1.03	27.3
East: Castle Hill Rd - E											
1	L2	193	2.7	0.848	29.5	LOS C	40.7	290.1	0.89	0.87	39.4
2	T1	1271	1.8	0.848	24.5	LOS B	40.7	290.1	0.79	0.80	42.5
3	R2	188	4.5	0.527	36.5	LOS C	8.5	61.6	0.93	0.83	35.1
Approach		1652	2.2	0.848	26.4	LOS B	40.7	290.1	0.82	0.81	41.1
North: Edward Bennett Drive - N											
4	L2	44	9.5	0.178	48.3	LOS D	2.0	15.5	0.92	0.73	31.1
5	T1	27	0.0	0.264	44.2	LOS D	3.3	23.4	0.93	0.74	30.5
6	R2	43	2.4	0.264	48.8	LOS D	3.3	23.4	0.93	0.74	31.6
Approach		115	4.6	0.264	47.5	LOS D	3.3	23.4	0.92	0.74	31.1
West: Castle Hill Road - W											
7	L2	58	9.1	0.594	34.6	LOS C	17.5	127.2	0.85	0.78	37.5
8	T1	791	3.5	0.594	27.8	LOS B	17.5	127.2	0.84	0.75	41.0
9	R2	56	1.9	0.745	66.6	LOS E	3.2	22.5	1.00	0.81	27.2
Approach		904	3.7	0.745	30.6	LOS C	17.5	127.2	0.85	0.76	39.5
All Vehicles		3067	2.6	0.886	33.3	LOS C	40.7	290.1	0.85	0.82	37.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	24.1	LOS C	0.1	0.1	0.68	0.68
P1	East Full Crossing	53	46.8	LOS E	0.1	0.1	0.94	0.94
P2	North Full Crossing	53	24.1	LOS C	0.1	0.1	0.68	0.68
All Pedestrians		158	31.6	LOS D			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2575 [3. Coonara Avenue/ Castle Hill Road/ Edward Bennett Drive - PM]

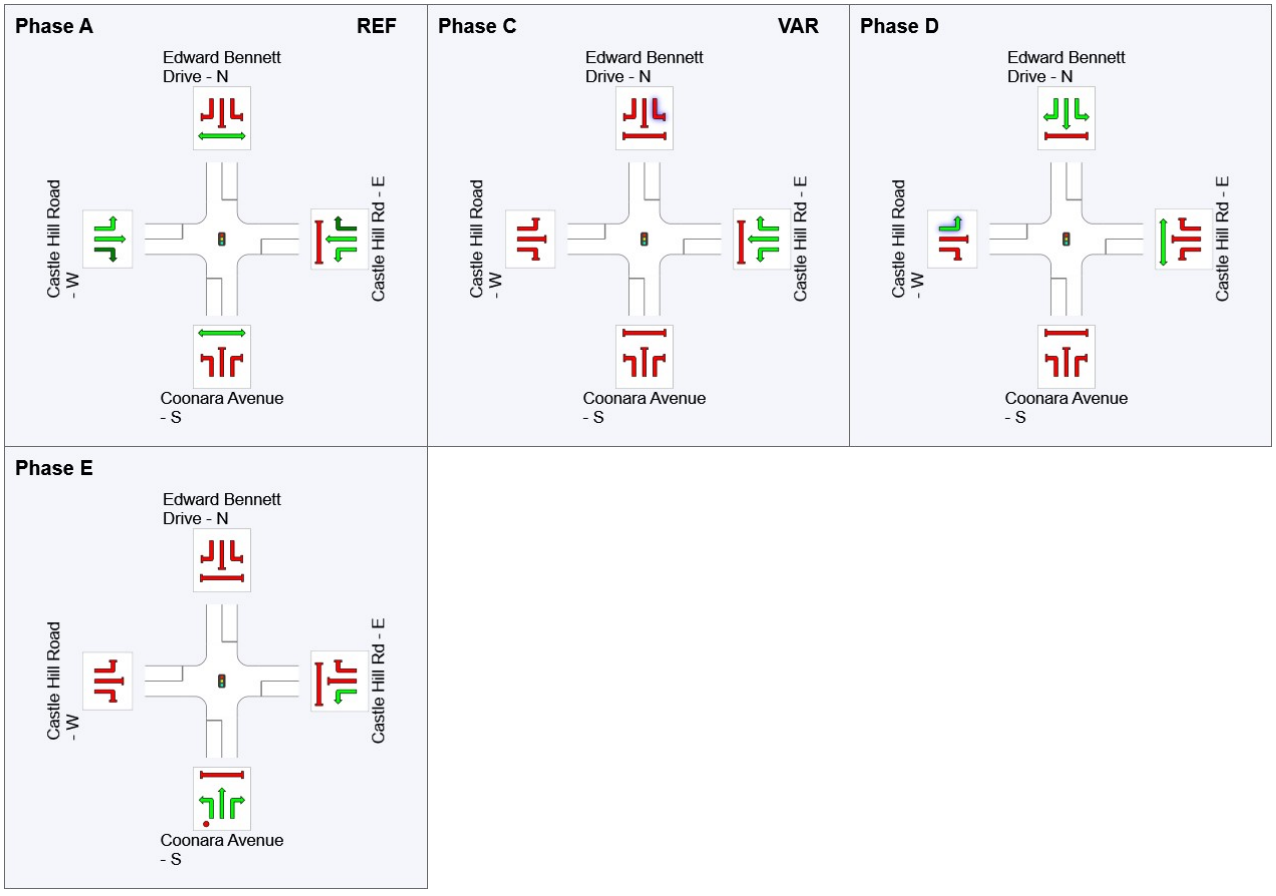
Existing intersection
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F*, F1*, F2*
Output Phase Sequence: A, C*, D, E
(* Variable Phase)

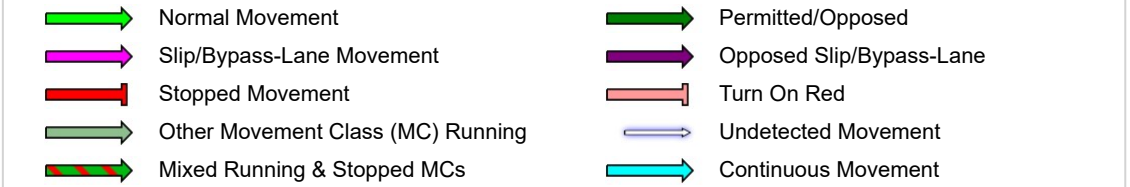
Phase Timing Results

Phase	A	C	D	E
Phase Change Time (sec)	0	47	65	86
Green Time (sec)	41	12	15	13
Phase Time (sec)	47	18	21	19
Phase Split	45%	17%	20%	18%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - AM - Scenario 1]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	51	14.6	0.203	3.3	LOS A	1.0	7.1	0.23	0.34	47.5
2	T1	357	1.8	0.203	2.9	LOS A	1.0	7.1	0.23	0.40	48.5
3	R2	145	0.7	0.203	7.7	LOS A	1.0	6.9	0.23	0.50	47.9
Approach		553	2.7	0.203	4.2	LOS A	1.0	7.1	0.23	0.42	48.2
East: Coonara Ave - E											
4	L2	189	0.0	0.166	4.1	LOS A	0.7	4.9	0.44	0.56	47.1
5	T1	24	0.0	0.076	4.7	LOS A	0.3	2.1	0.47	0.65	46.8
6	R2	29	10.7	0.076	9.8	LOS A	0.3	2.1	0.47	0.65	46.9
Approach		243	1.3	0.166	4.8	LOS A	0.7	4.9	0.44	0.58	47.0
North: Highs Rd - N											
7	L2	43	4.9	0.184	3.8	LOS A	0.8	6.0	0.36	0.41	47.1
8	T1	354	3.0	0.184	3.5	LOS A	0.8	6.0	0.36	0.43	48.3
9	R2	37	17.1	0.184	8.6	LOS A	0.8	6.1	0.37	0.46	48.2
Approach		434	4.4	0.184	4.0	LOS A	0.8	6.1	0.36	0.43	48.2
West: Highs Road - W											
10	L2	105	3.0	0.104	4.3	LOS A	0.4	2.9	0.44	0.56	47.0
11	T1	71	6.0	0.104	4.3	LOS A	0.4	2.9	0.46	0.58	47.6
12	R2	29	35.7	0.104	9.9	LOS A	0.4	3.1	0.47	0.58	47.4
Approach		205	8.7	0.104	5.1	LOS A	0.4	3.1	0.45	0.57	47.2
All Vehicles		1435	3.8	0.203	4.4	LOS A	1.0	7.1	0.34	0.47	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - AM - Scenario 3]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	51	14.6	0.212	3.4	LOS A	1.0	7.6	0.25	0.35	47.4
2	T1	357	1.8	0.212	2.9	LOS A	1.0	7.6	0.25	0.40	48.4
3	R2	163	0.6	0.212	7.8	LOS A	1.0	7.3	0.25	0.51	47.7
Approach		571	2.6	0.212	4.4	LOS A	1.0	7.6	0.25	0.43	48.1
East: Coonara Ave - E											
4	L2	263	0.0	0.230	4.2	LOS A	1.0	7.2	0.46	0.57	47.0
5	T1	24	0.0	0.099	4.9	LOS A	0.4	2.7	0.48	0.68	46.4
6	R2	42	7.5	0.099	10.0	LOS A	0.4	2.7	0.48	0.68	46.7
Approach		329	1.0	0.230	5.0	LOS A	1.0	7.2	0.46	0.59	46.9
North: Highs Rd - N											
7	L2	46	4.5	0.188	3.9	LOS A	0.9	6.1	0.37	0.42	47.1
8	T1	354	3.0	0.188	3.6	LOS A	0.9	6.1	0.38	0.44	48.2
9	R2	37	17.1	0.188	8.7	LOS A	0.8	6.2	0.38	0.46	48.1
Approach		437	4.3	0.188	4.0	LOS A	0.9	6.2	0.38	0.44	48.1
West: Highs Road - W											
10	L2	105	3.0	0.106	4.4	LOS A	0.4	3.0	0.45	0.57	47.0
11	T1	71	6.0	0.106	4.3	LOS A	0.4	3.0	0.48	0.59	47.5
12	R2	29	35.7	0.106	10.0	LOS A	0.4	3.2	0.48	0.59	47.3
Approach		205	8.7	0.106	5.2	LOS A	0.4	3.2	0.47	0.58	47.2
All Vehicles		1542	3.5	0.230	4.5	LOS A	1.0	7.6	0.36	0.49	47.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - AM -Scenario 2]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	51	14.6	0.222	3.5	LOS A	1.1	8.0	0.27	0.35	47.4
2	T1	357	1.8	0.222	3.0	LOS A	1.1	8.0	0.27	0.41	48.3
3	R2	181	0.6	0.222	7.9	LOS A	1.1	7.8	0.27	0.53	47.5
Approach		588	2.5	0.222	4.5	LOS A	1.1	8.0	0.27	0.44	48.0
East: Coonara Ave - E											
4	L2	335	0.0	0.293	4.3	LOS A	1.4	9.6	0.48	0.58	46.9
5	T1	24	0.0	0.119	5.0	LOS A	0.5	3.3	0.49	0.70	46.3
6	R2	56	5.7	0.119	10.0	LOS A	0.5	3.3	0.49	0.70	46.5
Approach		415	0.8	0.293	5.1	LOS A	1.4	9.6	0.48	0.60	46.8
North: Highs Rd - N											
7	L2	49	4.3	0.191	3.9	LOS A	0.9	6.3	0.38	0.43	47.0
8	T1	354	3.0	0.191	3.6	LOS A	0.9	6.3	0.39	0.45	48.2
9	R2	37	17.1	0.191	8.8	LOS A	0.9	6.3	0.39	0.47	48.1
Approach		440	4.3	0.191	4.1	LOS A	0.9	6.3	0.39	0.45	48.0
West: Highs Road - W											
10	L2	105	3.0	0.108	4.4	LOS A	0.4	3.1	0.47	0.58	46.9
11	T1	71	6.0	0.108	4.4	LOS A	0.4	3.1	0.49	0.60	47.5
12	R2	29	35.7	0.108	10.2	LOS A	0.4	3.3	0.49	0.60	47.3
Approach		205	8.7	0.108	5.3	LOS A	0.4	3.3	0.48	0.59	47.2
All Vehicles		1648	3.3	0.293	4.6	LOS A	1.4	9.6	0.38	0.50	47.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - AM]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	51	14.6	0.197	3.3	LOS A	0.9	6.8	0.21	0.34	47.6
2	T1	357	1.8	0.197	2.9	LOS A	0.9	6.8	0.21	0.39	48.5
3	R2	133	0.8	0.197	7.7	LOS A	0.9	6.6	0.22	0.48	48.0
Approach		540	2.7	0.197	4.1	LOS A	0.9	6.8	0.21	0.41	48.3
East: Coonara Ave - E											
4	L2	141	0.0	0.123	4.0	LOS A	0.5	3.5	0.42	0.54	47.1
5	T1	24	0.0	0.061	4.5	LOS A	0.2	1.7	0.46	0.61	47.1
6	R2	21	15.0	0.061	9.7	LOS A	0.2	1.7	0.46	0.61	47.2
Approach		186	1.7	0.123	4.7	LOS A	0.5	3.5	0.43	0.56	47.1
North: Highs Rd - N											
7	L2	41	5.1	0.182	3.8	LOS A	0.8	5.9	0.35	0.40	47.2
8	T1	354	3.0	0.182	3.4	LOS A	0.8	5.9	0.35	0.43	48.3
9	R2	37	17.1	0.182	8.6	LOS A	0.8	6.0	0.36	0.45	48.2
Approach		432	4.4	0.182	3.9	LOS A	0.8	6.0	0.35	0.43	48.2
West: Highs Road - W											
10	L2	105	3.0	0.103	4.2	LOS A	0.4	2.9	0.43	0.55	47.0
11	T1	71	6.0	0.103	4.2	LOS A	0.4	2.9	0.46	0.57	47.6
12	R2	29	35.7	0.103	9.8	LOS A	0.4	3.1	0.46	0.57	47.4
Approach		205	8.7	0.103	5.0	LOS A	0.4	3.1	0.44	0.56	47.3
All Vehicles		1363	4.0	0.197	4.3	LOS A	0.9	6.8	0.32	0.46	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - PM - Scenario 1]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	134	1.6	0.327	3.8	LOS A	1.8	12.6	0.38	0.42	47.1
2	T1	493	1.7	0.327	3.5	LOS A	1.8	12.6	0.38	0.47	47.9
3	R2	194	0.0	0.327	8.3	LOS A	1.8	12.4	0.39	0.54	47.6
Approach		820	1.3	0.327	4.7	LOS A	1.8	12.6	0.38	0.47	47.7
East: Coonara Ave - E											
4	L2	191	1.1	0.165	4.0	LOS A	0.7	5.0	0.42	0.55	47.1
5	T1	79	0.0	0.116	4.0	LOS A	0.5	3.3	0.43	0.53	47.6
6	R2	31	6.9	0.116	9.0	LOS A	0.5	3.3	0.43	0.53	47.8
Approach		300	1.4	0.165	4.5	LOS A	0.7	5.0	0.43	0.54	47.3
North: Highs Rd - N											
7	L2	47	4.4	0.168	3.9	LOS A	0.8	5.4	0.38	0.42	47.1
8	T1	254	0.4	0.168	3.5	LOS A	0.8	5.4	0.38	0.47	48.0
9	R2	94	2.2	0.168	8.4	LOS A	0.7	5.3	0.38	0.55	47.6
Approach		395	1.3	0.168	4.7	LOS A	0.8	5.4	0.38	0.48	47.8
West: Highs Road - W											
10	L2	46	4.5	0.075	4.7	LOS A	0.3	2.2	0.51	0.56	46.7
11	T1	41	0.0	0.075	4.4	LOS A	0.3	2.2	0.52	0.61	47.4
12	R2	51	4.2	0.075	9.6	LOS A	0.3	2.1	0.53	0.71	46.4
Approach		138	3.1	0.075	6.4	LOS A	0.3	2.2	0.52	0.63	46.8
All Vehicles		1653	1.5	0.327	4.8	LOS A	1.8	12.6	0.40	0.50	47.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - PM - Scenario 2]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	134	1.6	0.387	3.8	LOS A	2.2	15.9	0.41	0.42	47.0
2	T1	493	1.7	0.387	3.5	LOS A	2.2	15.9	0.41	0.47	47.9
3	R2	343	0.0	0.387	8.4	LOS A	2.2	15.6	0.42	0.60	46.9
Approach		969	1.1	0.387	5.3	LOS A	2.2	15.9	0.41	0.51	47.4
East: Coonara Ave - E											
4	L2	228	0.9	0.200	4.1	LOS A	0.9	6.3	0.45	0.55	47.0
5	T1	79	0.0	0.128	4.1	LOS A	0.5	3.7	0.45	0.56	47.4
6	R2	37	5.7	0.128	9.1	LOS A	0.5	3.7	0.45	0.56	47.7
Approach		344	1.2	0.200	4.6	LOS A	0.9	6.3	0.45	0.55	47.2
North: Highs Rd - N											
7	L2	74	2.9	0.199	4.4	LOS A	1.0	6.8	0.48	0.50	46.7
8	T1	254	0.4	0.199	4.1	LOS A	1.0	6.8	0.49	0.54	47.6
9	R2	94	2.2	0.199	9.1	LOS A	0.9	6.6	0.49	0.60	47.3
Approach		421	1.3	0.199	5.3	LOS A	1.0	6.8	0.49	0.55	47.4
West: Highs Road - W											
10	L2	46	4.5	0.081	5.0	LOS A	0.3	2.4	0.56	0.60	46.6
11	T1	41	0.0	0.081	4.7	LOS A	0.3	2.4	0.56	0.65	47.3
12	R2	51	4.2	0.081	10.0	LOS A	0.3	2.3	0.57	0.75	46.2
Approach		138	3.1	0.081	6.7	LOS A	0.3	2.4	0.57	0.67	46.6
All Vehicles		1873	1.3	0.387	5.3	LOS A	2.2	15.9	0.45	0.54	47.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - PM - Scenario 3]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	134	1.6	0.357	3.8	LOS A	2.0	14.2	0.39	0.42	47.1
2	T1	493	1.7	0.357	3.5	LOS A	2.0	14.2	0.39	0.47	47.9
3	R2	268	0.0	0.357	8.4	LOS A	2.0	13.9	0.40	0.57	47.2
Approach		895	1.2	0.357	5.0	LOS A	2.0	14.2	0.40	0.49	47.5
East: Coonara Ave - E											
4	L2	209	1.0	0.182	4.1	LOS A	0.8	5.6	0.44	0.55	47.0
5	T1	79	0.0	0.122	4.0	LOS A	0.5	3.5	0.44	0.55	47.5
6	R2	34	6.3	0.122	9.0	LOS A	0.5	3.5	0.44	0.55	47.8
Approach		322	1.3	0.182	4.6	LOS A	0.8	5.6	0.44	0.55	47.2
North: Highs Rd - N											
7	L2	61	3.4	0.183	4.1	LOS A	0.9	6.0	0.43	0.46	46.9
8	T1	254	0.4	0.183	3.8	LOS A	0.9	6.0	0.43	0.50	47.8
9	R2	94	2.2	0.183	8.8	LOS A	0.8	5.9	0.44	0.57	47.4
Approach		408	1.3	0.183	5.0	LOS A	0.9	6.0	0.43	0.51	47.6
West: Highs Road - W											
10	L2	46	4.5	0.078	4.8	LOS A	0.3	2.3	0.54	0.58	46.6
11	T1	41	0.0	0.078	4.5	LOS A	0.3	2.3	0.54	0.63	47.3
12	R2	51	4.2	0.078	9.8	LOS A	0.3	2.2	0.55	0.73	46.3
Approach		138	3.1	0.078	6.6	LOS A	0.3	2.3	0.54	0.65	46.7
All Vehicles		1763	1.4	0.357	5.0	LOS A	2.0	14.2	0.42	0.52	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [2. Coonara Avenue/ Highs Road/ Taylor Street - PM]

Coonara Avenue/ Highs Road/ Taylor Street existing conditions
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Taylor St - S											
1	L2	134	1.6	0.308	3.7	LOS A	1.6	11.6	0.37	0.42	47.1
2	T1	493	1.7	0.308	3.4	LOS A	1.6	11.6	0.37	0.46	48.0
3	R2	144	0.0	0.308	8.3	LOS A	1.6	11.4	0.38	0.51	47.8
Approach		771	1.4	0.308	4.4	LOS A	1.6	11.6	0.37	0.46	47.8
East: Coonara Ave - E											
4	L2	178	1.2	0.154	4.0	LOS A	0.6	4.6	0.42	0.54	47.1
5	T1	79	0.0	0.112	4.0	LOS A	0.4	3.1	0.43	0.53	47.6
6	R2	28	7.4	0.112	8.9	LOS A	0.4	3.1	0.43	0.53	47.9
Approach		285	1.5	0.154	4.5	LOS A	0.6	4.6	0.42	0.54	47.3
North: Highs Rd - N											
7	L2	39	5.4	0.160	3.7	LOS A	0.7	5.0	0.34	0.40	47.2
8	T1	254	0.4	0.160	3.3	LOS A	0.7	5.0	0.34	0.45	48.1
9	R2	94	2.2	0.160	8.3	LOS A	0.7	4.9	0.35	0.53	47.7
Approach		386	1.4	0.160	4.6	LOS A	0.7	5.0	0.34	0.46	47.9
West: Highs Road - W											
10	L2	46	4.5	0.073	4.6	LOS A	0.3	2.1	0.50	0.55	46.8
11	T1	41	0.0	0.073	4.2	LOS A	0.3	2.1	0.50	0.60	47.5
12	R2	51	4.2	0.073	9.4	LOS A	0.3	2.1	0.51	0.69	46.5
Approach		138	3.1	0.073	6.2	LOS A	0.3	2.1	0.50	0.62	46.9
All Vehicles		1580	1.5	0.308	4.6	LOS A	1.6	11.6	0.38	0.49	47.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM - Scenario 1]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 82 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	394	2.9	0.946	61.3	LOS E	21.5	154.0	1.00	1.14	28.1
11	T1	116	0.9	0.863	49.3	LOS D	5.7	39.9	1.00	1.00	31.8
12	R2	6	0.0	0.863	53.8	LOS D	5.7	39.9	1.00	1.00	31.0
Approach		516	2.4	0.946	58.5	LOS E	21.5	154.0	1.00	1.11	28.8
East: Castle Hill Road - E											
1	L2	6	33.3	0.913	59.8	LOS E	22.0	162.7	1.00	1.15	30.0
2	T1	869	6.2	0.913	50.7	LOS D	22.0	162.7	1.00	1.14	32.8
3	R2	96	14.3	0.777	52.3	LOS D	4.3	33.7	1.00	0.90	31.9
Approach		972	7.2	0.913	50.9	LOS D	22.0	162.7	1.00	1.12	32.7
North: Country Drive - N											
4	L2	97	7.6	0.167	17.7	LOS B	1.9	14.0	0.74	0.73	45.3
5	T1	161	2.0	0.327	28.3	LOS B	5.3	37.8	0.86	0.73	38.5
6	R2	859	2.9	0.922	51.8	LOS D	20.8	149.1	1.00	1.03	32.2
Approach		1117	3.2	0.922	45.5	LOS D	20.8	149.1	0.96	0.96	33.8
West: Castle Hill Road - W											
7	L2	597	2.5	0.657	14.3	LOS A	12.9	92.2	0.59	0.76	47.5
8	T1	852	3.7	0.733	28.4	LOS B	15.0	108.4	0.90	0.81	41.0
9	R2	201	5.8	0.651	26.7	LOS B	5.4	39.5	0.98	0.82	38.7
Approach		1649	3.5	0.733	23.1	LOS B	15.0	108.4	0.80	0.79	42.8
All Vehicles		4254	4.1	0.946	39.6	LOS C	22.0	162.7	0.91	0.95	35.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	28.3	LOS C	0.1	0.1	0.83	0.83
P1	East Full Crossing	53	35.3	LOS D	0.1	0.1	0.93	0.93
P2	North Full Crossing	53	35.3	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		158	33.0	LOS D			0.90	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM - Scenario 1]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 82 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

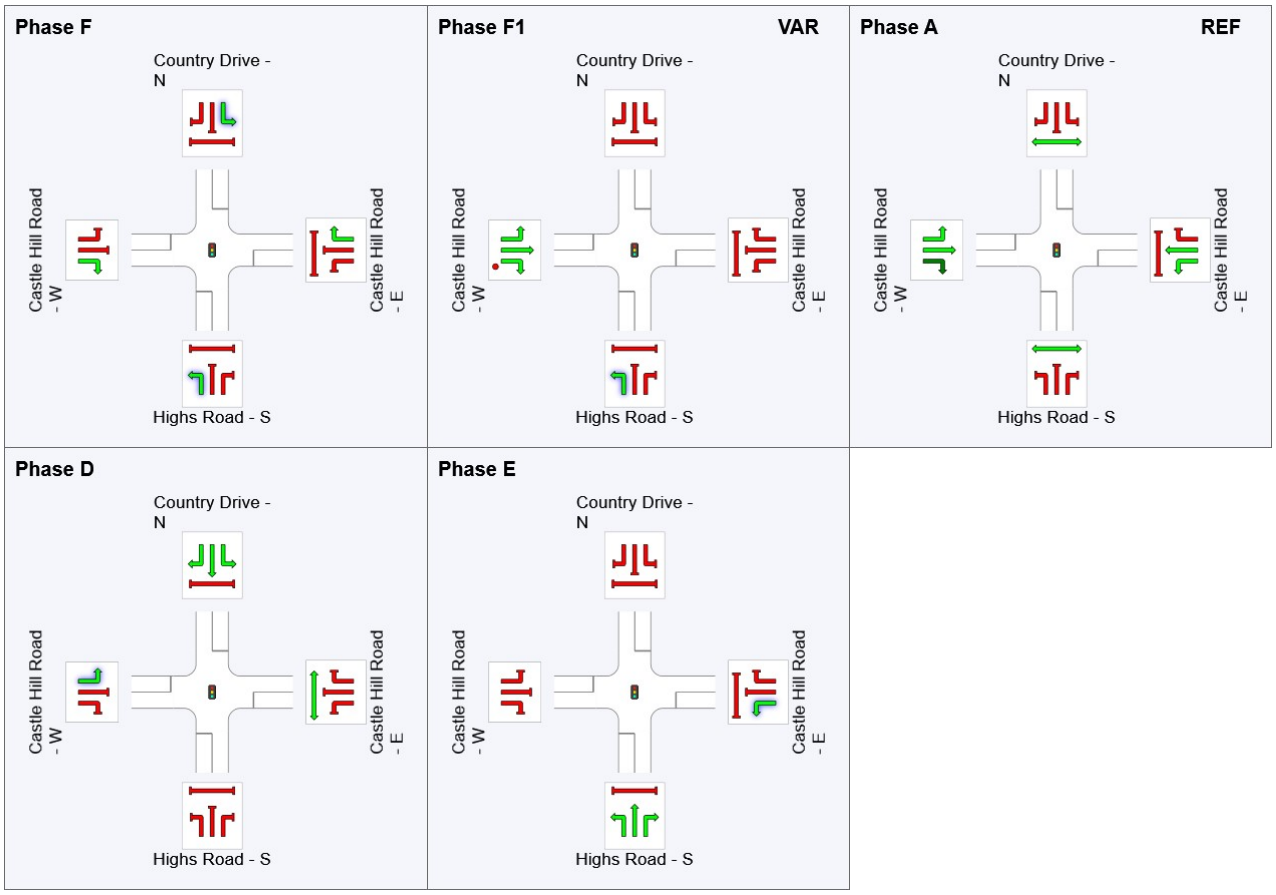
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: F, F1*, F2*, A, B*, C*, D, E
Output Phase Sequence: F, F1*, A, D, E
(* Variable Phase)

Phase Timing Results

Phase	F	F1	A	D	E
Phase Change Time (sec)	66	78	0	27	54
Green Time (sec)	6	***	21	21	6
Phase Time (sec)	12	4	27	27	12
Phase Split	15%	5%	33%	33%	15%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.
If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.



REF: Reference Phase
VAR: Variable Phase


Stopped Movement
Other Movement Class (MC) Running
Mixed Running & Stopped MCs
Other Movement Class (MC) Stopped
Turn On Red
Undetected Movement
Continuous Movement
Phase Transition Applied

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM - Scenario 2]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	420	2.8	0.949	64.9	LOS E	24.8	177.6	1.00	1.12	27.3
11	T1	116	0.9	0.812	50.6	LOS D	6.0	42.0	1.00	0.94	31.4
12	R2	6	0.0	0.812	55.2	LOS D	6.0	42.0	1.00	0.94	30.6
Approach		542	2.3	0.949	61.8	LOS E	24.8	177.6	1.00	1.08	28.1
East: Castle Hill Road - E											
1	L2	6	33.3	0.915	63.7	LOS E	23.9	176.4	1.00	1.14	29.1
2	T1	869	6.2	0.915	54.6	LOS D	23.9	176.4	1.00	1.13	31.8
3	R2	96	14.3	0.852	59.9	LOS E	4.9	38.2	1.00	0.96	29.9
Approach		972	7.2	0.915	55.2	LOS D	23.9	176.4	1.00	1.12	31.5
North: Country Drive - N											
4	L2	97	7.6	0.171	19.4	LOS B	2.1	15.8	0.75	0.73	44.4
5	T1	161	2.0	0.327	30.9	LOS C	5.8	41.4	0.86	0.73	37.5
6	R2	859	2.9	0.924	55.6	LOS D	22.6	162.1	1.00	1.02	31.1
Approach		1117	3.2	0.924	48.9	LOS D	22.6	162.1	0.96	0.95	32.8
West: Castle Hill Road - W											
7	L2	597	2.5	0.627	14.0	LOS A	13.3	94.9	0.55	0.75	47.6
8	T1	852	3.7	0.671	26.8	LOS B	14.9	107.9	0.85	0.74	41.8
9	R2	207	5.6	0.606	26.9	LOS B	5.8	42.2	0.97	0.80	38.6
Approach		1656	3.5	0.671	22.2	LOS B	14.9	107.9	0.75	0.75	43.2
All Vehicles		4286	4.1	0.949	41.6	LOS C	24.8	177.6	0.89	0.93	35.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	30.5	LOS D	0.1	0.1	0.82	0.82
P1	East Full Crossing	53	37.4	LOS D	0.1	0.1	0.91	0.91
P2	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
All Pedestrians		158	35.7	LOS D			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM - Scenario 2]

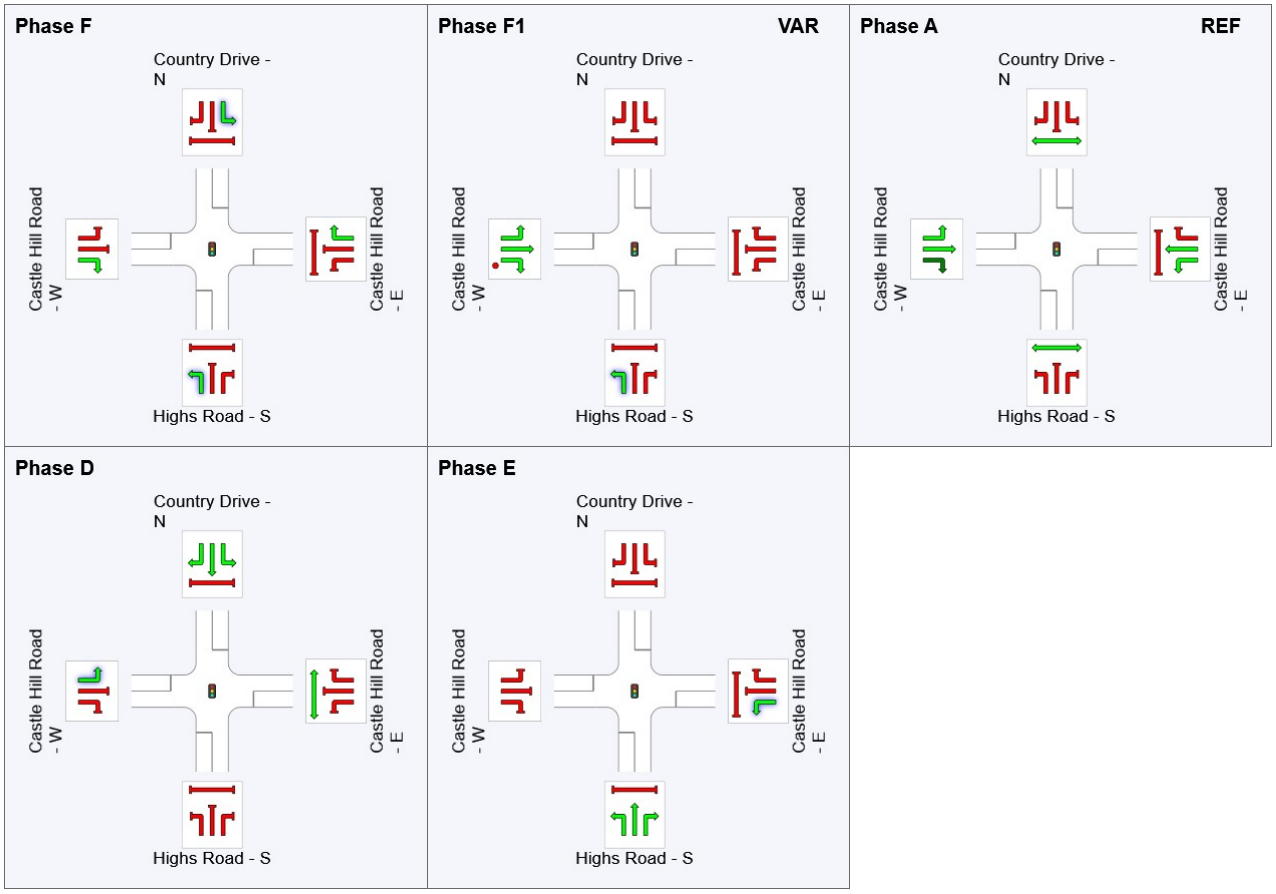
Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: F, F1*, F2*, A, B*, C*, D, E
Output Phase Sequence: F, F1*, A, D, E
(* Variable Phase)

Phase Timing Results

Phase	F	F1	A	D	E
Phase Change Time (sec)	71	83	0	29	58
Green Time (sec)	6	1	23	23	7
Phase Time (sec)	12	7	29	29	13
Phase Split	13%	8%	32%	32%	14%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM - Scenario 3]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	406	2.8	0.921	57.0	LOS E	22.2	159.1	0.99	1.07	29.0
11	T1	116	0.9	0.812	50.6	LOS D	6.0	42.0	1.00	0.94	31.4
12	R2	6	0.0	0.812	55.2	LOS D	6.0	42.0	1.00	0.94	30.6
Approach		528	2.4	0.921	55.6	LOS D	22.2	159.1	0.99	1.04	29.5
East: Castle Hill Road - E											
1	L2	6	33.3	0.915	63.7	LOS E	23.9	176.4	1.00	1.14	29.1
2	T1	869	6.2	0.915	54.6	LOS D	23.9	176.4	1.00	1.13	31.8
3	R2	96	14.3	0.852	59.9	LOS E	4.9	38.2	1.00	0.96	29.9
Approach		972	7.2	0.915	55.2	LOS D	23.9	176.4	1.00	1.12	31.5
North: Country Drive - N											
4	L2	97	7.6	0.171	19.4	LOS B	2.1	15.8	0.75	0.73	44.4
5	T1	161	2.0	0.327	30.9	LOS C	5.8	41.4	0.86	0.73	37.5
6	R2	859	2.9	0.924	55.6	LOS D	22.6	162.1	1.00	1.02	31.1
Approach		1117	3.2	0.924	48.9	LOS D	22.6	162.1	0.96	0.95	32.8
West: Castle Hill Road - W											
7	L2	597	2.5	0.627	14.0	LOS A	13.3	94.9	0.55	0.75	47.6
8	T1	852	3.7	0.671	26.8	LOS B	14.9	107.9	0.85	0.74	41.8
9	R2	204	5.7	0.597	26.9	LOS B	5.7	41.5	0.96	0.80	38.6
Approach		1653	3.5	0.671	22.2	LOS B	14.9	107.9	0.75	0.75	43.2
All Vehicles		4269	4.1	0.924	40.8	LOS C	23.9	176.4	0.89	0.92	35.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	30.5	LOS D	0.1	0.1	0.82	0.82
P1	East Full Crossing	53	37.4	LOS D	0.1	0.1	0.91	0.91
P2	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
All Pedestrians		158	35.7	LOS D			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM - Scenario 3]

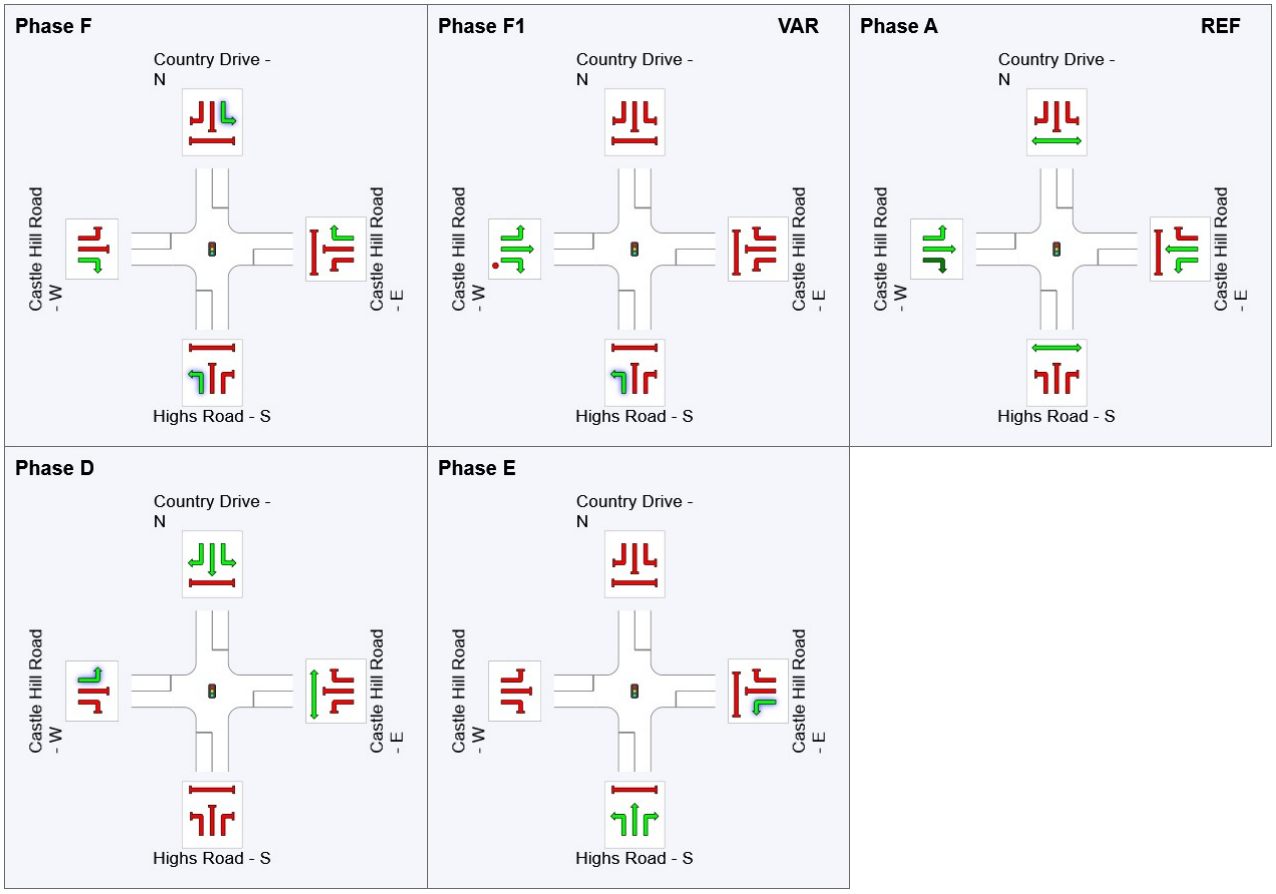
Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: F, F1*, F2*, A, B*, C*, D, E
Output Phase Sequence: F, F1*, A, D, E
(* Variable Phase)

Phase Timing Results

Phase	F	F1	A	D	E
Phase Change Time (sec)	71	83	0	29	58
Green Time (sec)	6	1	23	23	7
Phase Time (sec)	12	7	29	29	13
Phase Split	13%	8%	32%	32%	14%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	385	3.0	0.925	56.7	LOS E	20.4	146.1	1.00	1.09	29.1
11	T1	116	0.9	0.894	53.3	LOS D	6.0	42.3	1.00	1.04	30.7
12	R2	6	0.0	0.894	57.9	LOS E	6.0	42.3	1.00	1.04	30.0
Approach		507	2.5	0.925	56.0	LOS D	20.4	146.1	1.00	1.08	29.4
East: Castle Hill Road - E											
1	L2	6	33.3	0.903	59.1	LOS E	22.2	163.8	1.00	1.12	30.1
2	T1	869	6.2	0.903	50.1	LOS D	22.2	163.8	1.00	1.12	33.0
3	R2	96	14.3	0.805	54.9	LOS D	4.5	35.3	1.00	0.92	31.2
Approach		972	7.2	0.903	50.6	LOS D	22.2	163.8	1.00	1.10	32.8
North: Country Drive - N											
4	L2	97	7.6	0.167	18.3	LOS B	2.0	14.7	0.74	0.73	45.0
5	T1	161	2.0	0.323	29.0	LOS C	5.5	39.0	0.85	0.72	38.2
6	R2	859	2.9	0.912	51.2	LOS D	20.9	150.2	1.00	1.01	32.3
Approach		1117	3.2	0.912	45.2	LOS D	20.9	150.2	0.96	0.95	33.9
West: Castle Hill Road - W											
7	L2	597	2.5	0.625	14.0	LOS A	12.9	92.1	0.57	0.76	47.7
8	T1	852	3.7	0.704	27.3	LOS B	14.8	107.1	0.88	0.77	41.5
9	R2	199	5.8	0.620	26.5	LOS B	5.3	39.3	0.98	0.81	38.8
Approach		1647	3.5	0.704	22.4	LOS B	14.8	107.1	0.78	0.77	43.2
All Vehicles		4243	4.1	0.925	38.9	LOS C	22.2	163.8	0.90	0.93	36.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	28.9	LOS C	0.1	0.1	0.83	0.83
P1	East Full Crossing	53	35.9	LOS D	0.1	0.1	0.92	0.92
P2	North Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		158	33.8	LOS D			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - AM]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

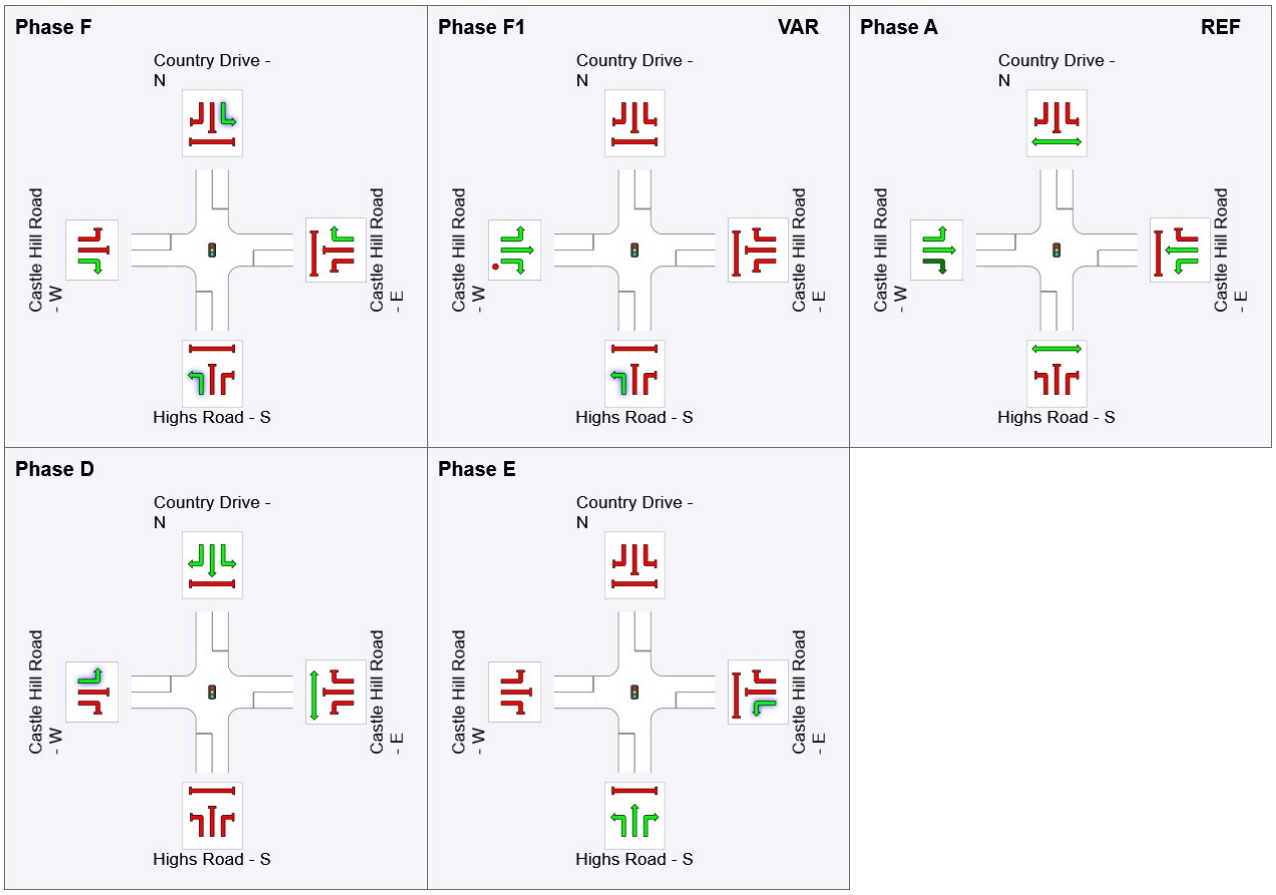
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: F, F1*, F2*, A, B*, C*, D, E
Output Phase Sequence: F, F1*, A, D, E
(* Variable Phase)

Phase Timing Results

Phase	F	F1	A	D	E
Phase Change Time (sec)	68	80	0	28	56
Green Time (sec)	6	***	22	22	6
Phase Time (sec)	12	5	28	28	12
Phase Split	14%	6%	33%	33%	14%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.
If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM - Scenario 1]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	398	2.9	0.952	72.2	LOS F	26.4	189.1	0.99	1.10	25.9
11	T1	154	0.7	0.859	58.8	LOS E	9.1	64.1	1.00	1.00	29.4
12	R2	6	0.0	0.859	63.3	LOS E	9.1	64.1	1.00	1.00	28.7
Approach		558	2.3	0.952	68.4	LOS E	26.4	189.1	0.99	1.07	26.8
East: Castle Hill Road - E											
1	L2	9	0.0	0.944	58.3	LOS E	43.0	305.0	1.00	1.13	30.5
2	T1	1367	1.6	0.944	51.2	LOS D	43.0	305.0	0.99	1.12	32.7
3	R2	106	5.0	0.616	57.3	LOS E	5.5	40.2	1.00	0.81	30.7
Approach		1483	1.8	0.944	51.6	LOS D	43.0	305.0	0.99	1.10	32.5
North: Country Drive - N											
4	L2	52	8.2	0.118	25.4	LOS B	1.5	11.1	0.81	0.72	41.3
5	T1	104	0.0	0.347	44.5	LOS D	4.8	33.9	0.94	0.75	32.9
6	R2	539	1.4	0.952	77.5	LOS F	17.8	126.0	1.00	1.09	26.3
Approach		695	1.7	0.952	68.7	LOS E	17.8	126.0	0.98	1.02	27.9
West: Castle Hill Road - W											
7	L2	674	1.4	0.802	20.2	LOS B	21.3	150.6	0.62	0.80	44.1
8	T1	771	2.9	0.476	20.2	LOS B	11.6	83.1	0.64	0.55	45.2
9	R2	292	1.4	0.894	52.1	LOS D	13.3	94.5	1.00	1.03	30.5
Approach		1736	2.1	0.894	25.5	LOS B	21.3	150.6	0.69	0.73	41.5
All Vehicles		4472	2.0	0.952	46.2	LOS D	43.0	305.0	0.87	0.94	33.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	24.3	LOS C	0.1	0.1	0.68	0.68
P1	East Full Crossing	53	46.3	LOS E	0.1	0.1	0.94	0.94
P2	North Full Crossing	53	28.6	LOS C	0.1	0.1	0.74	0.74
All Pedestrians		158	33.0	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM - Scenario 1]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

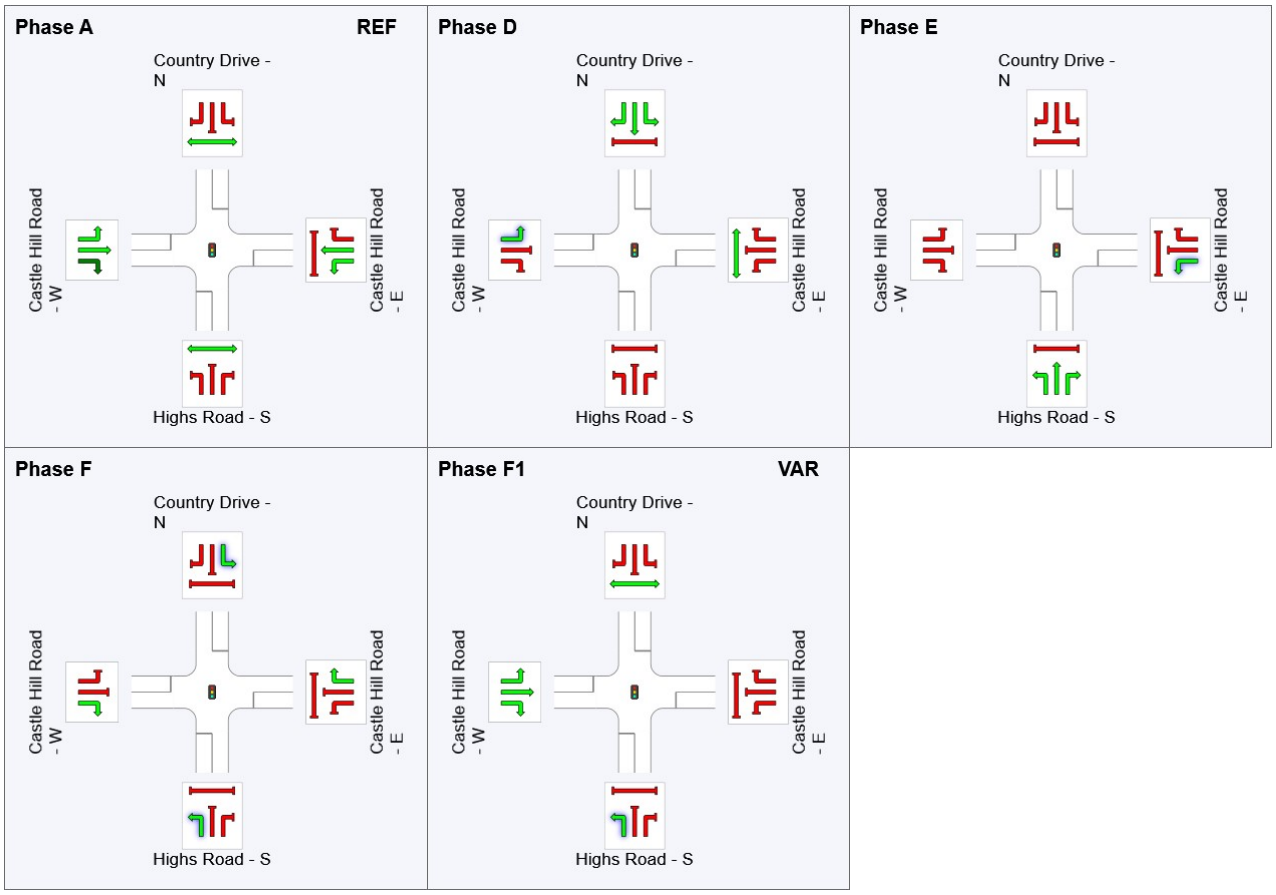
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F, F1*
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F	F1
Phase Change Time (sec)	0	46	68	84	100
Green Time (sec)	40	16	10	10	***
Phase Time (sec)	46	22	16	16	4
Phase Split	44%	21%	15%	15%	4%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.
If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM - Scenario 2]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 109 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	404	2.9	0.955	75.1	LOS F	28.0	200.7	0.99	1.10	25.4
11	T1	154	0.7	0.900	65.5	LOS E	9.9	69.6	1.00	1.05	27.9
12	R2	6	0.0	0.900	70.1	LOS E	9.9	69.6	1.00	1.05	27.3
Approach		564	2.2	0.955	72.5	LOS F	28.0	200.7	0.99	1.09	26.0
East: Castle Hill Road - E											
1	L2	9	0.0	0.945	59.9	LOS E	44.8	318.1	1.00	1.12	30.0
2	T1	1367	1.6	0.945	52.8	LOS D	44.8	318.1	0.99	1.11	32.2
3	R2	106	5.0	0.497	55.9	LOS D	5.5	40.1	0.98	0.78	31.0
Approach		1483	1.8	0.945	53.1	LOS D	44.8	318.1	0.99	1.08	32.1
North: Country Drive - N											
4	L2	52	8.2	0.107	25.0	LOS B	1.5	11.3	0.78	0.72	41.5
5	T1	104	0.0	0.343	46.3	LOS D	5.0	35.3	0.94	0.75	32.4
6	R2	539	1.4	0.939	76.2	LOS F	18.0	127.3	1.00	1.06	26.5
Approach		695	1.7	0.939	67.9	LOS E	18.0	127.3	0.97	0.99	28.0
West: Castle Hill Road - W											
7	L2	674	1.4	0.819	22.7	LOS B	23.5	166.5	0.64	0.81	42.8
8	T1	771	2.9	0.532	22.2	LOS B	14.2	101.5	0.66	0.57	44.1
9	R2	318	1.3	0.920	60.0	LOS E	16.6	117.5	1.00	1.06	28.6
Approach		1762	2.0	0.920	29.2	LOS C	23.5	166.5	0.71	0.75	39.8
All Vehicles		4504	1.9	0.955	48.5	LOS D	44.8	318.1	0.88	0.94	32.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	25.2	LOS C	0.1	0.1	0.68	0.68
P1	East Full Crossing	53	48.8	LOS E	0.2	0.2	0.95	0.95
P2	North Full Crossing	53	30.2	LOS D	0.1	0.1	0.74	0.74
All Pedestrians		158	34.7	LOS D			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM - Scenario 2]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 109 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

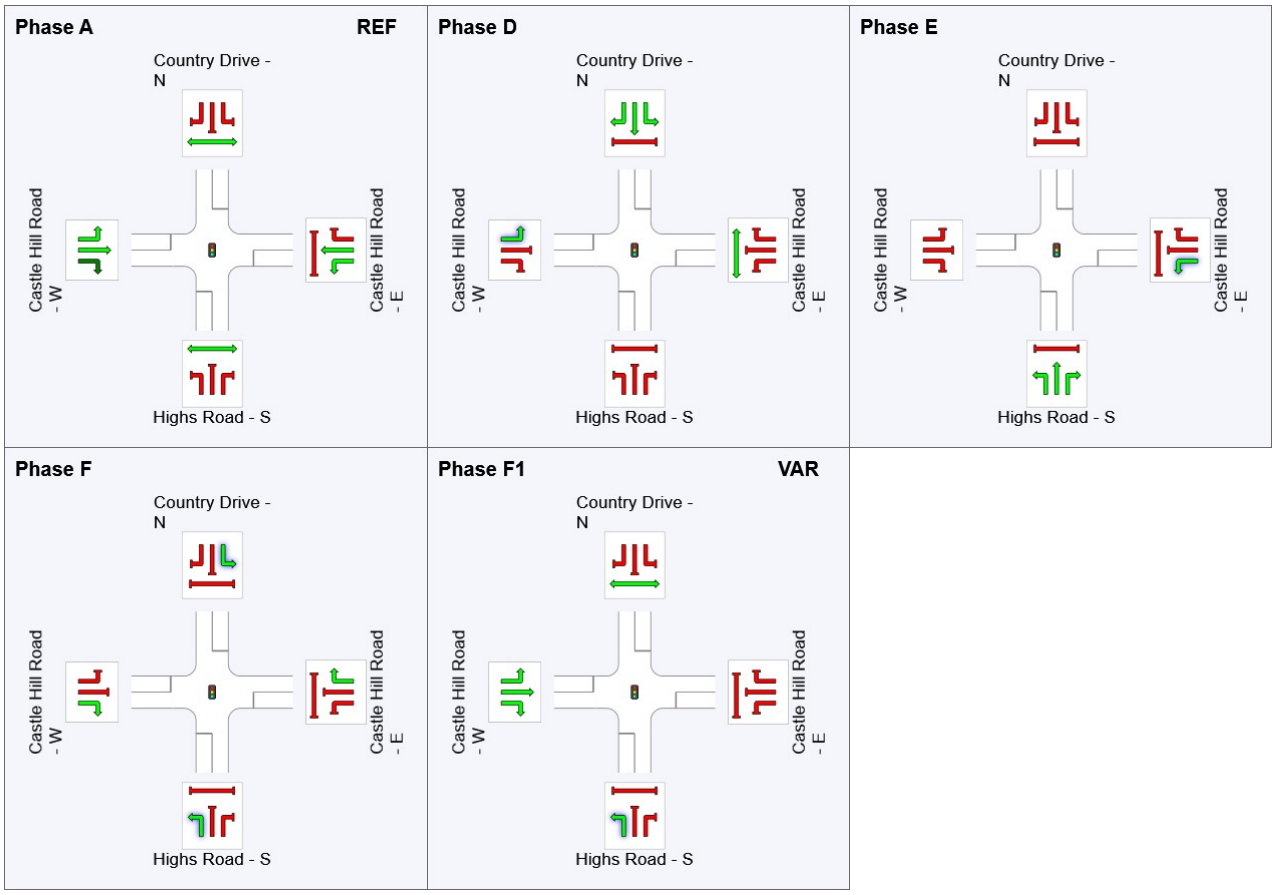
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F, F1*
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F	F1
Phase Change Time (sec)	0	48	71	87	106
Green Time (sec)	42	17	10	13	***
Phase Time (sec)	48	23	16	19	3
Phase Split	44%	21%	15%	17%	3%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.
If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM - Scenario 3]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 112 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	401	2.9	0.949	73.9	LOS F	27.8	199.7	0.98	1.08	25.6
11	T1	154	0.7	0.925	70.9	LOS F	10.5	73.6	1.00	1.09	26.8
12	R2	6	0.0	0.925	75.5	LOS F	10.5	73.6	1.00	1.09	26.2
Approach		561	2.3	0.949	73.1	LOS F	27.8	199.7	0.99	1.08	25.9
East: Castle Hill Road - E											
1	L2	9	0.0	0.929	55.4	LOS D	43.5	308.8	1.00	1.08	31.2
2	T1	1367	1.6	0.929	48.3	LOS D	43.5	308.8	0.98	1.06	33.6
3	R2	106	5.0	0.289	27.0	LOS B	2.6	19.3	0.88	0.76	41.0
Approach		1483	1.8	0.929	46.8	LOS D	43.5	308.8	0.97	1.03	34.0
North: Country Drive - N											
4	L2	52	8.2	0.072	17.7	LOS B	1.1	8.5	0.63	0.70	45.3
5	T1	104	0.0	0.352	48.0	LOS D	5.2	36.5	0.94	0.75	31.9
6	R2	539	1.4	0.965	86.0	LOS F	19.5	138.1	1.00	1.10	24.8
Approach		695	1.7	0.965	75.2	LOS F	19.5	138.1	0.96	1.02	26.6
West: Castle Hill Road - W											
7	L2	674	1.4	0.940	49.5	LOS D	35.5	251.2	0.95	1.00	32.6
8	T1	771	2.9	0.727	39.1	LOS C	18.9	135.2	0.90	0.79	36.7
9	R2	305	1.4	0.752	29.3	LOS C	11.5	81.7	0.83	0.84	37.7
Approach		1749	2.0	0.940	41.4	LOS C	35.5	251.2	0.91	0.88	35.1
All Vehicles		4488	1.9	0.965	52.4	LOS D	43.5	308.8	0.95	0.98	31.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	25.2	LOS C	0.1	0.1	0.67	0.67
P1	East Full Crossing	53	50.3	LOS E	0.2	0.2	0.95	0.95
P2	North Full Crossing	53	42.1	LOS E	0.1	0.1	0.87	0.87
All Pedestrians		158	39.2	LOS D			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM - Scenario 3]

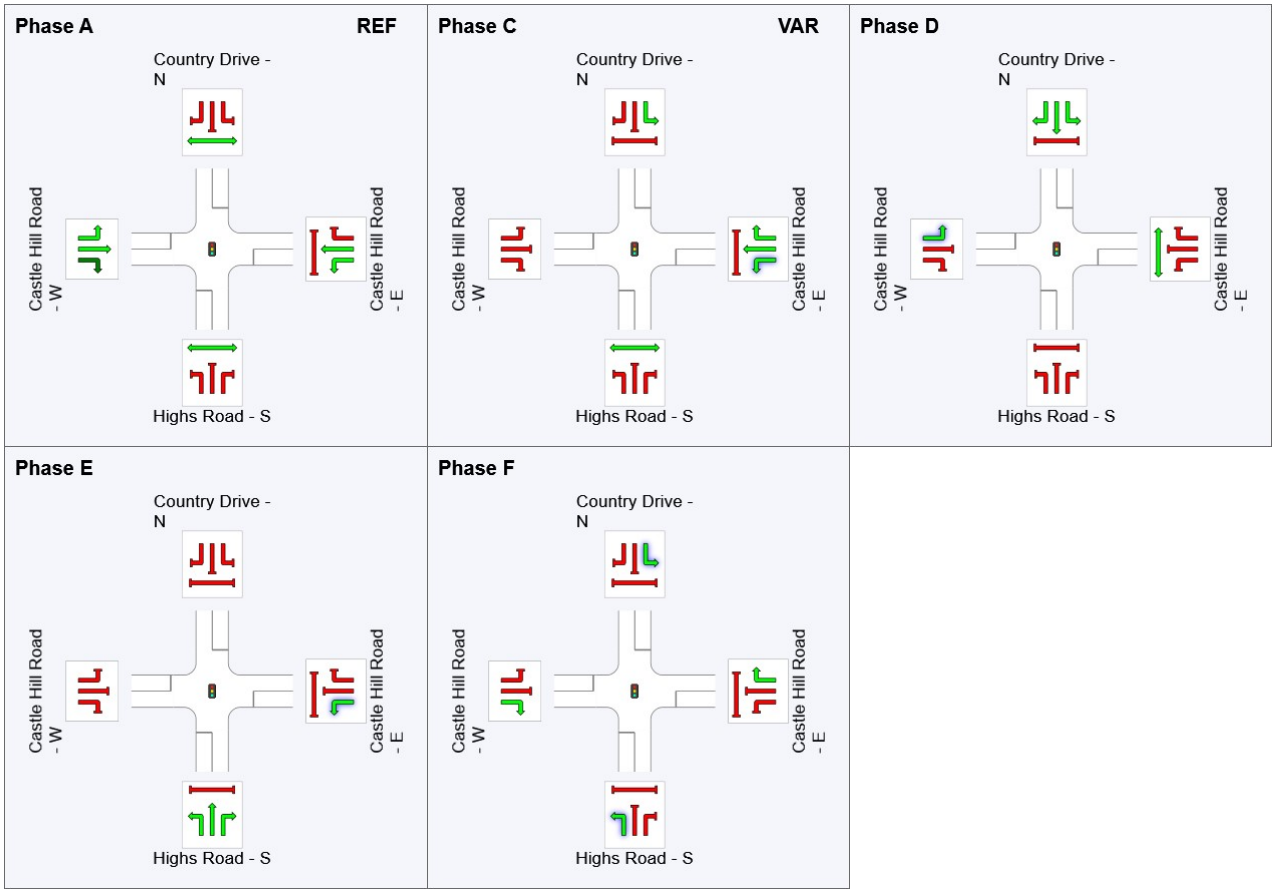
Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 112 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, C*, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	C	D	E	F
Phase Change Time (sec)	0	38	50	73	89
Green Time (sec)	32	6	17	10	17
Phase Time (sec)	38	12	23	16	23
Phase Split	34%	11%	21%	14%	21%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement

 Other Movement Class (MC) Stopped  Phase Transition Applied

MOVEMENT SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Highs Road - S											
10	L2	396	2.9	0.947	72.7	LOS F	27.0	193.6	0.98	1.08	25.8
11	T1	154	0.7	0.908	67.2	LOS E	10.1	70.8	1.00	1.07	27.5
12	R2	6	0.0	0.908	71.7	LOS F	10.1	70.8	1.00	1.07	27.0
Approach		556	2.3	0.947	71.2	LOS F	27.0	193.6	0.99	1.08	26.3
East: Castle Hill Road - E											
1	L2	9	0.0	0.933	56.1	LOS D	43.4	307.7	1.00	1.09	31.0
2	T1	1367	1.6	0.933	48.9	LOS D	43.4	307.7	0.98	1.07	33.4
3	R2	106	5.0	0.593	59.3	LOS E	5.7	41.9	1.00	0.80	30.2
Approach		1483	1.8	0.933	49.7	LOS D	43.4	307.7	0.98	1.05	33.1
North: Country Drive - N											
4	L2	52	8.2	0.115	26.7	LOS B	1.6	11.9	0.80	0.72	40.8
5	T1	104	0.0	0.346	46.8	LOS D	5.1	35.7	0.94	0.75	32.2
6	R2	539	1.4	0.948	79.1	LOS F	18.5	130.7	1.00	1.08	26.0
Approach		695	1.7	0.948	70.4	LOS E	18.5	130.7	0.98	1.00	27.5
West: Castle Hill Road - W											
7	L2	674	1.4	0.795	19.0	LOS B	21.1	149.2	0.61	0.78	44.8
8	T1	771	2.9	0.461	19.9	LOS B	11.7	84.1	0.61	0.53	45.3
9	R2	283	1.5	0.823	46.2	LOS D	12.1	85.5	1.00	0.97	32.1
Approach		1727	2.1	0.823	23.9	LOS B	21.1	149.2	0.67	0.70	42.3
All Vehicles		4461	2.0	0.948	45.6	LOS D	43.4	307.7	0.86	0.91	33.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	South Full Crossing	53	24.9	LOS C	0.1	0.1	0.67	0.67
P1	East Full Crossing	53	49.3	LOS E	0.2	0.2	0.95	0.95
P2	North Full Crossing	53	28.4	LOS C	0.1	0.1	0.72	0.72
All Pedestrians		158	34.2	LOS D			0.78	0.78

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 2719 [1. Highs Road/ Castle Hill Road/ Country Drive - PM]

Existing conditions
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

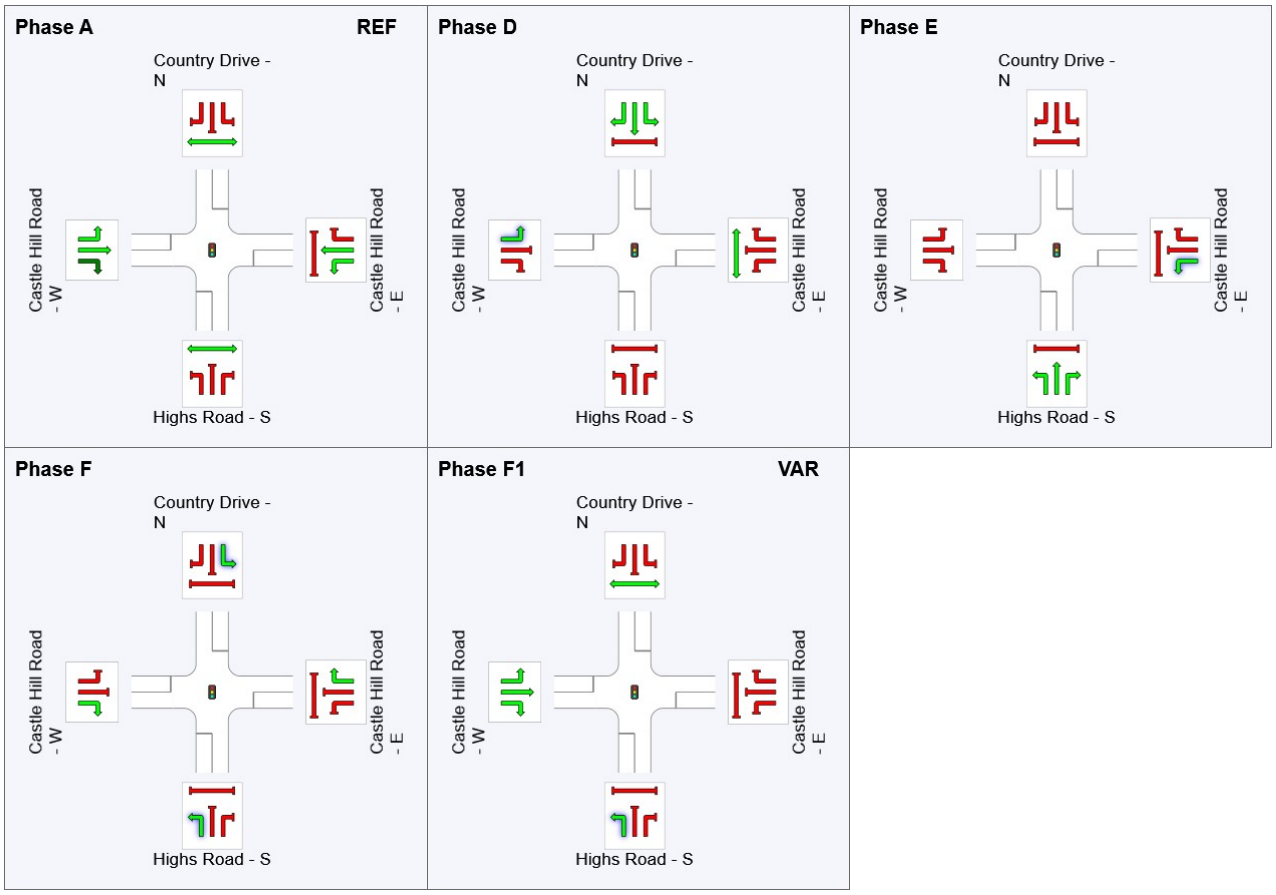
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F, F1*
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F	F1
Phase Change Time (sec)	0	49	72	88	105
Green Time (sec)	43	17	10	11	***
Phase Time (sec)	49	23	16	17	5
Phase Split	45%	21%	15%	15%	5%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.
If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.



REF: Reference Phase
VAR: Variable Phase


Stopped Movement
Other Movement Class (MC) Running
Mixed Running & Stopped MCs
Other Movement Class (MC) Stopped
Turn On Red
Undetected Movement
Continuous Movement
Phase Transition Applied

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